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Finite and participial postmodifiers in spoken academic discourse:
natural and social science

Finitní a participiální postmodifikace v mluveném akademickém diskurzu:
přírodní a společenské vědy

DIPLOMOVÁ PRÁCE

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Prohlašuji, že jsem diplomovou práci vypracovala samostatně, že jsem řádně citovala všechny použité prameny a literaturu a že práce nebyla využita v rámci jiného vysokoškolského studia či k získání jiného nebo stejného titulu.

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.....

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Abstract

The subject of the present study is a comparison of two postmodifying constructions in noun phrases – finite relative adnominal clauses with the subject gap and nonfinite participial clauses – in spoken academic discourse: natural and social science. The comparison is based on the fact that both constructions realize the same clause element, i.e. a postmodifier in a noun phrase. The aim of the present study is thus to present major characteristics and functions of finite relative clauses and their reduced counterparts with respect to their distribution across the two subregisters of spoken academic discourse.

The study is divided into three main parts: the theoretical background (Chapter 2) which defines the major characteristics and functions of the two postmodifying constructions and their mutual relationship, as are presented in the literature; the main part (Chapters 3 and 4) which provides the analysis of finite relative clauses and participial postmodifiers; and conclusion in Chapter 5.

Tato diplomová práce se zabývá porovnáním dvou typů postmodifikačních konstrukcí v anglickém akademickém projevu – finitní věty vztažné s relativem v podmětu a věty participiální. Nejenže tyto dvě konstrukce realizují tentýž větný člen, tj. postmodifikátor v rámci substantivní fráze, ale jsou také obecně považovány za ekvivalentní. Cílem práce je tedy poskytnout podrobnější popis obou konstrukcí z hlediska jejich charakteru a užití v mluveném akademickém projevu.

Práce je rozdělena do tří hlavních částí, a to teoretického úvodu (kapitola 2), který definuje vlastnosti obou typů postmodifikátorů a jejich vzájemný vztah, jak je popsáno v literatuře; hlavní části (kapitoly 3-4), která prezentuje vlastní výzkum; a části závěrečné v kapitole 5.

Abbreviations

<i>CamGr</i>	Cambridge Grammar of the English Language
<i>CGEL</i>	A Comprehensive Grammar of the English Language
<i>LGSWE</i>	Longman Grammar of Spoken and Written English
MC	main clause
NAT	natural science
NP	noun phrase
PP	prepositional phrase
pres	present
RC	relative clause
S	subject
SOC	social science
VP	verb phrase

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1. INTRODUCTION

The present study deals with postmodification of noun phrases realized by two postmodifying constructions – finite relative adnominal clauses and nonfinite participial clauses. The study focuses on the distribution of these postmodifiers in spoken academic discourse, particularly in its two subregisters, namely natural science and social science. The previous research carried out by Šaldová (2005a) on the data obtained from written academic prose revealed that although the frequency of the postmodifying finite and nonfinite structures overall is more or less comparable in social and natural science texts, there are certain differences in the use of the respective forms. Hence, an attempt will be made to ascertain whether similar differences (both in quantitative and qualitative aspects) in the use of the finite and nonfinite postmodifiers are observable between the two subregisters of spoken discourse.

Moreover, based on the fact that academic lectures have highly informative purpose (as in academic prose) and they display some characteristics of face-to-face conversation as they are produced in the spoken mode, academic lectures as a register are considered to occur on a continuum between academic prose placed at one end of the continuum and face-to-face conversation occupying the other end of the continuum (Csomay 2000). Thus, another goal of the study is to discover the linguistic characteristics of academic lectures as regards clausal postmodification, describing the extent to which this register shares linguistic features of conversation and academic prose.

The theoretical part (Chapter 2) presents the concept of a noun phrase from various aspects, starting with its general description and its major components. The focus is also on the syntactic function the noun phrase performs within the sentence structure. Next, various approaches taken by different grammarians towards the division and classification of the postmodifying clauses are introduced. Afterwards, finite relative clauses and participial postmodifiers are described in separate sections. Chapter 3 presents a quantitative overview of the two structures in the particular subregisters. Chapter 4 provides a description of the finite relative clauses in terms of the relative pronoun and its function in the matrix clause, the function of the postmodified noun phrase in the superordinate structure and the character of the verb phrase. The latter two of the mentioned features are also dealt with in the nonfinite forms; present participles and past participles being studied in two separate sections. The last section of Chapter 4 presents a summary of the results and deals with the comparison of the two postmodifying structures in spoken and written discourse.

2. THEORETICAL BACKGROUND

The purpose of this chapter is to present the properties of the noun phrase and to describe its major components. The reason why we speak of the noun phrase is that the postmodifying structures which are of the main interest to the present study represent one of the important components of the noun phrase.

This chapter therefore provides the major characteristics of noun phrases including the description of their structure and syntactic functions they perform within sentence structure (2.1), defines the notion ‘postmodification’ and presents the main features of relative clauses and participles as they are presented in the literature (2.2), and in (2.3) a comparison of the mutual relationship and functions of the two structures is provided.

2.1 Noun phrase

As far as the structure of a noun phrase is concerned, Biber et al. (1999: 97) distinguish four major components within an NP: a **head**, mostly realized by a noun, **determiners**, **modifiers** and **complements**. While the head (having the controlling function) together with determiners (specifying the reference of the head noun) represent obligatory components, modifiers and complements are used optionally since they “only” describe or classify the entity denoted by the head noun (in the case of modifiers) or complete the meaning of the noun (in the case of complements). As has been mentioned, noun phrases can be headed by a noun, either a common noun (*house, hair, girl*) or a proper noun (*Dawn, Wembley*), a nominalized adjective (*the rich, the impossible*) and also a pronoun (*they, you, anybody, anything*). It should be stressed that “pronouns are a special class of noun” (Jacobs 1995: 97), varying from ordinary nouns in that they do not normally occur with determiners and modifiers. In other words, although pronouns do not generally take determiners and modifiers, they are treated as a class of nouns by virtue of functioning as the head of an NP (Huddleston & Pullum 2002: 327).

A more detailed distinction among determiners, modifiers and complements is drawn by Huddleston (1993: 232-65) who uses the term ‘dependents’ for the above-mentioned components as they depend on the head of an NP. Those dependents that precede the head are referred to as ‘pre-head dependents’ (which include determiners and pre-head modifiers¹), whereas those dependents that follow the head are termed as ‘post-head dependents’

¹They are also referred to as premodifiers by Quirk et al. (1985) and Biber et al. (1999).

(subsuming complements, post-head modifiers² and peripheral dependents). Concerning the determiners, they are further subdivided, based on their position with respect to the head noun, into predeterminers (e.g. *all, both, half*), central determiners (e.g. definite and indefinite articles, demonstrative pronouns), and postdeterminers (e.g. *numerals, every, many*). It is, however, crucial to stress that any NP may contain three determiners at the most; one out of each group. Pre-head modifiers are primarily realized by adjectives [1], nouns [2], or verbs, either in *-ing* form [3] or *-en* form [4]. The distinction among the individual dependents is illustrated by example [5], where the head noun *ideas* is determined by all three possible determiners; by the predeterminer *all*, central determiner *her*, and postdeterminer *many*, and simultaneously it is premodified by the adjective *good*:

[1] *that glorious sunset*

[2] *a Yorkshire dialect*

[3] *the simmering stew*

[4] *the captured terrorist*

[5] *all her many good ideas*

While the traditional grammarians (Biber et al. (1999), Huddleston (1993), Quirk et al. (1985)) are more or less united as regards the division of pre-head dependents, the approaches concerning the classification of post-head dependents considerably differ. Quirk et al. classify all the items occurring after the head as postmodifiers. Huddleston, on the other hand, distinguishes among these items and divides them into post-head modifiers and complements, both of which can be realized by phrases and clauses. Furthermore, he includes into items following the head noun also peripheral dependents, which will be of concern later in this section.

From the viewpoint of form, post-head modifiers can be realized by phrases (e.g. prepositional, adjective, adverb phrases) and subordinate relative clauses (finite or nonfinite); complements are generally realized by prepositional phrases or subordinate content clauses which can be again finite or nonfinite (Huddleston 1993: 261). The distinction between complements and post-head modifiers is supported by Jacobs (1995) and Biber et al. (1999), who prefer the term ‘complement clause’ to content clause. Jacobs (1995: 100) accounts for the reason for such a distinction: “While the complement clause normally specifies the content of its head noun, modifiers identify who or what the whole noun phrase refers to.”

²They are also referred to as postmodifiers by Quirk et al. (1985) and Biber et al. (1999).

Thus, in [6]³ the content clause *that Eleanor had met with the senator* expresses the content of the head noun *story*, whereas in [7] *that*-relative clause identifies *the story*:

[6] [*The story*] *that Eleanor had met with the senator*.

[7] [*The story*] *that Eleanor had given to the senator*.

(Jacobs 1995: 100)

Another difference lies in the classification of the particle *that*. While in [7] *that* is a relative pronoun representing an element in the clause structure functioning as object, in [6] *that* is a subordinating conjunction (Quirk et al. 1985: 1260).

Another difference between content and relative clauses is perceived when taking the subclassification of head nouns into account:

“... any noun (save a few pronouns) can take a relative clause as dependent, whereas only a small subclass on nouns can take a content clause: they are mainly nouns with stems derived in lexical morphology from verbs or adjectives that take clause complements (e.g. *belief*, *knowledge*, *eagerness*, etc.) plus one or two with morphologically simple stems (*fact*, *idea*).”
(Huddleston 1993: 263)

It should be pointed out that Quirk et al. (1985: 1244) also recognize the two types of clauses, relative and content clauses, both of which are subsumed under postmodifiers; however, for the latter type a different term is employed, i.e. appositive clause. Nevertheless, the syntactic and semantic properties of content and appositive clauses are the same.

The last post-head dependents to be discussed are peripheral dependents defined by Huddleston (1993: 264) as:

“Peripheral dependents are distinguished prosodically from modifiers and complements: they occur with a separate intonation contour; in writing they are typically marked off by commas (or some stronger punctuation, dashes or parentheses).”

These dependents subsume nonrestrictive relative clauses⁴ [8], content clauses [9] and noun phrases [10] “being in apposition⁵ to the preceding noun, but with the apposition being ‘loose’ or ‘non-restrictive’ in contrast to the ‘close’ or ‘restrictive’ apposition...” (ibid. 265):

[8] [*my father*], *who had just returned from Paris*

[9] [*her suggestion*] – *that we should pay half the costs*

[10] [*her uncle*], *an infantry colonel*

³ The head NP is in square brackets and respective postmodifiers are underlined.

⁴ Restrictive vs. nonrestrictive relative clauses are dealt with in (2.2.1.2).

⁵ Quirk & Greenbaum (1973: 276) define apposition as follows: “Apposition resembles coordination in linking units having grammatical affinity. But, in addition, for units to be *appositives*, they must normally be identical in reference or else the reference of one must be included in the reference of the other.” Other units of the appositional coordinated linking can be also realized by *of*-phrases ([*the island*] *of Manhattan*), pronouns ([*She*] *herself signed the receipt.*), or numerals ([*You*] *three go there!*) (Dušková 2006: 502).

Before proceeding to the next section devoted to a detailed classification of postmodifiers, there are two important features of an NP which are worth mentioning. First, a comment will be made on a multiple postmodification and complex noun phrase since as Quirk et al. (1985: 1238) note: “just as the sentence may be indefinitely complex, so may the noun phrase”. And second, the focus will be on the syntactic function of a postmodified NP within a higher clause.

The notion ‘complexity of the modification structure’ can be defined as “expansion through coordination and subordination⁶” (Dušková 2009: 43). Coordination may be found in the head noun and/or in the postmodification within an NP (ibid.). While in example [11] the conjunction *and* conjoins two nouns which both occur in the head of the NP, in [12] *and* conjoins two postmodifiers, i.e. the prepositional phrase *in the corner* and the *-ing* clause *talking to John*:

[11] [*the man and woman*] *in the corner*

[12] [*the man*] *in the corner and talking to John*

(Quirk et al. 1985: 1297)

The latter is the instance of multiple postmodification where an NP contains “in addition to a determiner and a head noun, one or more modifiers” (Dušková 2009: 29). However, the internal structure of an NP might be ambiguous. See example [13]. Here Biber et al. (1999: 576) emphasize that “potentially *focused on development physiology* could postmodify either *study* or *variability*. However, semantically it is much more likely that the study, not variability, is focused on physiology”. Thus, both modifiers postmodify the head noun *study*. On the other hand, we may encounter cases where postmodifiers modify “a noun in another postmodifier instead of the top-level head noun” (Biber et al. 1999: 577). In such cases we speak of embedded postmodifiers⁷. Example [14]⁸ represents a configuration which comprises five postmodifiers in successive dependence. To put it differently, each postmodifier modifies the immediately adjacent head noun contained in the preceding postmodifier. Furthermore, the complexity of noun phrases is not limited, as can be seen in example [15], and thus an NP may comprise multiple postmodifiers with many embedded ones.

⁶Subordination concerns the instance in which all modifiers occur on the first level of dependence (Dušková 2009: 43).

⁷They are also referred to as ‘pushdown elements’ by Quirk et al. (1985).

⁸To highlight the complexity of the instances, all head NPs are in square brackets and respective postmodifiers underlined. Superscripts ^{1,2,3}, etc. indicate levels of embedding and superscripts ^{1a, 1b}, etc. indicate embedding at the same level.

[13] *Since most taxonomists agree about its monospecific status, [a study] of intraspecific variability focused on development physiology may be undertaken on a large scale.*

[14] *There has been [a trend] ¹towards [chronic, insidious and complex groups] ²of [diseases] ³caused by [organisms] ⁴which are often [normal inhabitants] ⁵of the animal body.*

[15]⁹ *Ideally environmental pollution is avoidable provided [certain well recognized prerequisites] ¹for [efficient captive recycling] ^{2a}of [nonrenewable materials] ^{3a}of production ¹and [strict control] ^{2b}of [pollutant emissions] ^{3b}into the environment are fulfilled.*

(Biber et al. 1999: 576-77)

In the case of NPs with two postmodifiers immediately following the head, Biber et al. (1999: 642-44) advocate that the most frequent combinations are: ‘head + PP + PP’ or ‘head + any structural type + relative clause’. The reason for relative clauses occurring frequently in the second position is that they overtly mark their postmodifier status by means of the relativizer; thus, they are easily recognized as postmodifiers even when they are distant from the head. In contrast, prepositional phrases mostly postmodify the immediately preceding noun. Example [16] illustrates the case where numerous postmodifiers (two PPs in our case) intervene between a head noun and the final relative clause:

[16] *Terms such as Geist or representation collective have no satisfactory English equivalents, and themselves express [some of the differences] ^{1a}in [social development] ²between Britain, Germany and France ^{1b}which are touched upon in the book.*

(Biber et al. 1999: 642)

The other important aspect of NPs to be discussed is the syntactic function the postmodified NP performs within sentence structure. There seems to be a prominent difference in the realization form of postmodification with respect to the syntactic function of an NP. The most important distinction is between noun phrases in the subject and nonsubject positions, i.e. noun phrases containing a relative clause as a postmodifier occur rarely in the subject position, which can be accounted for the fact that:

“... relative clauses with subject heads disrupt the matrix clause-hearers/readers must process the relative clause before reaching the main verb of the matrix clause. On the other hand, relative clauses with non-subject heads occur after the matrix clause verb; this position is strongly preferred because it does not interrupt the flow of the matrix clause and is in keeping with the principle of end weight.” (Biber et al. 1999: 623)

Therefore, this fact will be taken into account in the following analytical part. It is then essential to mention the possible syntactic functions in which a noun phrase can occur. A

⁹On the first level of dependence, there is coordination in postmodification where the first postmodifier *for efficient captive recycling of nonrenewable material of production* is conjoined with the other postmodifier *strict control of pollutant emissions into the environment* by the conjunction *and*.

noun phrase can within a main clause function as a subject [17], direct object [18], indirect object [19], subject complement [20], object complement¹⁰ [21], prepositional object [22], complement of preposition [23], adverbial [24], apposition [25], and premodifier of noun [26]:

[17] *The doctor arrived.*

[18] *We need a doctor.*

[19] *At primary school he had been allowed to make her a birthday card.*

[20] *Kim is a doctor.*

[21] *No, I know but they'll probably christen her Victoria.*

[22] *I don't know whether my brain can cope with all this.*

[23] *He worked in a shop – probably at that time.*

[24] *Fred arrived the day before yesterday.*

[25] *I finally met his wife, a distinguished anthropologist.*

[26] *He was also chairman of Labour's home policy committee.*

(Biber et al. 1999: 98-99; Huddleston & Pullum 2002: 326-27)

As the aim of the present paper is to compare finite relative clauses and participial forms functioning as postmodifiers, we will not further discuss determiners and premodifiers, and the following sections will be restricted to the classification of postmodifiers, particularly clausal postmodifiers. As far as the terminology and classification are concerned, the approach of Quirk et al. is adhered to; therefore, the postmodifiers of a noun phrase will include “all the items placed after the head” (Quirk et al. 1985: 1239).

2.2 Postmodification by clauses

It has already been anticipated that clauses postmodifying an NP can be realized either by a finite or nonfinite form. These two forms differ from each other not only in their syntactic functions, but also in their distribution (Rafajlovičová 2012); hence, commenting on these differences is of interest to the present study. However, before these similarities and dissimilarities are elaborated on, finite and nonfinite clauses are discussed separately.

¹⁰ Subject complement is also referred to as subject predicative by Biber et al. (1999) or predicative complement by Huddleston & Pullum (2002) and object complement as object predicative by Biber et al. (1999) or object predicate by Huddleston & Pullum (2002).

2.2.1 Finite clauses

In section (2.1), it was noted that clauses occurring in the function of noun phrase postmodifiers include relative clauses [7] and appositive clauses [6]. Although both the clauses can postmodify an NP, this study focuses only on relative clauses. Thus, this section attempts to describe general characteristics of relative clauses and to define which type and structure is the subject of the present study.

2.2.1.1 Structure of relative clauses

At the very beginning, it needs to be emphasized that the term ‘relative clause’ is employed for adnominal relative clauses here, excluding all the other types of relative clauses¹¹.

From the viewpoint of syntax, a relative clause is introduced by the relativizer which relates back to the head of a noun phrase. Such a head noun is generally referred to as the antecedent (Rafajlovičová 2008: 75). Relativizers can be realized by three different word classes, namely a pronoun (*who*, *whom*, *which*, *that*), a determiner (*whose*) or an adverb (*when*, *where*, *why*) which introduces relative clauses of time, place and reason (Dušková 2006: 606-25). However, *whom* and *whose* are treated as two morphological forms of *who* indicating objective and genitive case respectively (Quirk et al. 1985: 366). Another option is that “the relativizer can be omitted with many relative clauses (referred to as the zero relativizer¹²)” (Biber et al. 1999: 609). All instances containing the individual relativizers are exemplified in the following (ibid. 608-611):

[27] [*The lowest pressure ratio*] ***which*** *will give an acceptable performance is always chosen.*

[28] *There are [plenty of existing owners] ***who*** are already keen to make the move.*

[29] *There was [a slight, furtive boy] ***whom*** no one knew.*

[30] *It was good for [the fans], ***whose*** support so far this season has been fantastic.*

[31] *Do you want [a cup of tea] ***that***'s been brewing for three days?*

[32] *I could lead you to [the shop] ***where*** I bought it.*

[33] *He was born in another age, [the age] ***when*** we played not for a million dollars in prize money.*

[34] *There are [many reasons] ***why*** we may wish to automate parts of the decision process.*

[35] [*The next thing*] () *she knows, she's talking to Danny.*

¹¹ Typology of relative clauses is dealt with in (2.2.1.2).

¹² The zero relativizer is to be marked by parentheses in the sample sentences.

Apart from relating back to the antecedent, the relative pronoun “signals subordination and, at the same time, occupies the role of a corresponding clause element within the relative clause” (Šaldová 2005a: 10). Hence, example [36] illustrates that the relative clause *that Mama wore* postmodifies the head noun *earrings* where the relative pronoun *that* not only signals subordination of the clause, but also functions as its direct object. The underlying meaning of the relative clause would be then *Mama wore the diamond earrings* (Biber et al. 1999: 608). In other words, the relativization process leaves a gap in a dependent clause structure and the element originally occupying that position is called the ‘relativized element’ (or, ‘gapped element’) (Huddleston & Pullum 2002: 1037).

[36] [*the diamond earrings*] *that Mama wore*.

It should be also stressed that Huddleston & Pullum (2002) do not treat *that* as a relative pronoun; instead, they regard it as a subordinator introducing declarative content clause. One of the reasons for *that* having the different syntactic status from *who*, *which*, etc. is ‘finiteness’¹³. They (ibid. 1057) argue:

“*That* relatives are always finite, as are the declarative content clauses introduced by *that*. Note then, that we cannot insert *that* into non-*wh* relative¹⁴ infinitivals like *a knife to cut with* – cf. **a knife that to cut with*. If *that* were a pronoun this would be a special fact needing explanation, but under the subordinator analysis it is exactly what we would expect, given that *that* is a finite clause subordinator.”

However, the different syntactic status of *wh*-forms and *that* is disregarded here since, as Šaldová (2005a: 11) explains, it “has no bearing upon the relation between finite and nonfinite clauses”. Thus, *wh*-forms, *that* and zero relativizer are treated as relative pronouns in the present study.

The choice of a relative pronoun in a relative clause is determined by a number of factors which depend on: 1) the relation of the relative clause to its head noun (restrictive vs. nonrestrictive); 2) the gender of the head noun (personal vs. nonpersonal); 3) the syntactic function of the relative pronoun in the subordinate clause (Quirk et al. 1985: 1247-48). A more detailed description concerning the distribution of particular relative pronouns in relative clauses is provided for instance in Quirk et al. (1985: 1247-60), Biber et al. (1999: 609-630), or Dušková (2006: 616-27).

It has already been noted that relativizers have a syntactic role as a clause element. Such a role can be accounted for by a gap which is left in the relative clause by the relativization process. Biber et al. (1999: 608-609) discriminate between subject [37] and

¹³ For more reasons for treating *that* as a subordinator, see Huddleston & Pullum (2002: 1056-57).

¹⁴ To learn about the typology of relative clauses according to Huddleston & Pullum (2002), see (2.2.1.2).

nonsubject gap depending on which element is relativized within the relative clause. Clause elements that can be gapped (other than subject) subsume object [38], subject complement [39], complement of preposition [40], adverbial [41], and possessive determiner [42]:

[37] *They are delighted with [the person] who has been appointed.*

[38] *They are delighted with [the book] which she has written.*

[39] *She is [the perfect accountant] which her predecessor was not.*

[40] *He is [the policeman] who the burglar fired the gun at.*

[41] *She arrived [the day] () I was ill.*

[42] *[The woman] whose daughter you met is Mrs Brown.*

(Quirk et al. 1985: 1248-49)

The distinction of which element is gapped in restrictive relative clauses is highly important in fulfilling a discourse function of unmarked word order since subject noun phrases generally refer to given entities, while object noun phrases usually provide new information, which correlates with the nature of the normal or unmarked word order (Biber et al. 1999: 622, 899). As a result:

“The subject of a relative clause will typically be known, and often a human participant. When a non-subject element is gapped, the primary function of the relative clause is to associate the head noun with that known entity given in the subject position. Construction of this type are considerably more common in conversation and fiction than in written exposition...In contrast, when the gap is in subject position, it is likely that non-subject noun phrase elements in the relative clause will provide new information, in addition to identifying the reference of the head noun. This pattern fits the informational purposes of written exposition, and thus these constructions are most common in news and academic prose.” (ibid. 622)

The issue concerning a discourse function of postmodifiers will be further discussed in connection with participial clauses in (2.2.2.2).

2.2.1.2 Typology of relative clauses

It seems vital to establish the terminology of relative clauses to be used throughout the study since, as Šaldová (2005a: 13) remarks, both “realization forms and functions result in varied typologies of relative clauses, and the diverse terms applied to the individual types”. First, the account presented by Huddleston & Pullum (2002) is introduced and subsequently it is compared to the one of Quirk et al. (1985).

Huddleston & Pullum (2002) draw a contrast between formal and relational types. The distinction of the formal types is based on the presence or absence of an anaphoric element the interpretation of which is determined by its antecedent. Thus, relative clauses of formal type are divided into *wh* relatives (containing one of the special relative words *who*, *which*,

etc.) [43] and non-*wh* relatives. The latter are further subdivided into *that* relatives [44] and bare relatives [45] depending on whether *that* is present or not.

[43] *He'll be glad to take [the boys] which you don't want.*

[44] *He'll be glad to take [the boys] that you don't want.*

[45] *He'll be glad to take [the boys] () you don't want.*

The relational classification derives from the external relation of the relative clause to the items they postmodify. Four types are distinguished: integrated relative [46], supplementary relative [47], cleft relative [48], and fused relative clause [49]:

[46] *[The boys] who defaced the statue were expelled.*

[47] *[My father], who retired last year, now lives in Florida.*

[48] *It was [Kim] who wanted Pat as treasurer.*

[49] *What you say is quite right.*

[50] *Pat is [afraid of snakes], which I'm sure Kim is too.*

[51] *[Pat is afraid of snakes], which doesn't surprise me at all.*

The integrated relative represents the most central and most frequent type of relative clause. It is integrated into the structure of the containing clause in terms of prosody and informational content, i.e. the relative clause delimits the denotative range of the antecedent it postmodifies. Hence, the relative clause *who defaced the statue* in [46] restricts the set of boys only to those boys who defaced the statue. Furthermore, this type of clause is often referred to as 'restrictive relative' due to its restrictive nature. Supplementary relative¹⁵ provides additional information about the head noun. Such a relative clause is neither integrated into the construction that contains it nor does it delimit the denotation of the antecedent. Moreover, unlike integrated relatives, supplementary relatives may relate to a much wider range of antecedents, i.e. a phrase [50] or a whole clause [51]. Cleft relative occurs after the particular element in an *it*-cleft construction and puts focus on this element. Finally, fused relative clause contains its antecedent; the *wh*-word can be regarded to be representing both the antecedent and the relativizer as in [49] - the antecedent cannot be identified separately from the relative clause, thus the term 'fused'.

In contrast, Quirk et al. (1985) distinguish three types of relative clause, namely adnominal¹⁶ relative clause, either restrictive [52] or nonrestrictive [53], nominal relative clause [54] and sentential relative clause [55]:

¹⁵ Supplementary relative is often termed as 'non-restrictive relative clause' (Huddleston & Pullum 2002).

¹⁶ Dušková (2006: 615) employs the term 'adjectival relative clause'.

[52] [*The news*] that appeared in the papers this morning was well received.

[53] [*Rattlesnakes*], which are poisonous, should be avoided.

[54] What surprises me is that they are fond of snakes and lizards.

[55] [*They are fond of snakes and lizards*], which surprises me.

To compare the accounts of Huddleston & Pullum and Quirk et al., we may state that adnominal restrictive relative clauses share the same syntactic and semantic features with integrated relatives. Similarly, nominal relative clauses correspond to fused relatives, and supplementary relatives correspond to nonrestrictive and sentential relative clauses since sentential clauses contain clausal antecedent represented by the main clause. An overview of these two accounts is provided below.

Figure 1: Overview of the types of relative clauses

Huddleston & Pullum		Quirk et al.	EXAMPLE
Formal type	Relational type		
Wh relatives	Integrated →	→ Adnominal restrictive	<i>The boys who defaced the statue were expelled.</i>
Non-wh relatives	Supplementary ↗ ↘	→ Adnominal nonrestrictive	<i>My father, who retired last year, now lives in Florida.</i>
		→ Sentential	<i>Pat is afraid of snakes, which doesn't surprise me at all.</i>
	Fused →	→ Nominal	<i>What you say is quite right.</i>
	Cleft		<i>It was Kim who wanted Pat as treasurer.</i>

Since the aim of the present study is to investigate adnominal relative clauses, nominal and sentential relative clauses will not be examined further, and adnominal relative clauses will be referred to as 'relative clauses' throughout the paper unless indicated otherwise.

2.2.2 Nonfinite clauses

In general, nonfinite clauses differ from their finite counterparts in that they contain a nonfinite verb phrase. Not only has this verb phrase no tense and mood contrast, but it also does not express person concord and number concord. Compare the nonfinite clause in [56] with the corresponding finite clause [57] where all the above-mentioned categories are expressed, i.e. present tense, indicative mood, gender and number concord.

[56] **Knowing** my temper, I didn't reply.

[57] **I know** my temper.

(Quirk et al. 1985: 149, 992)

According to Quirk et al. (1985: 993), there are altogether four structural classes of nonfinite verb clauses: *to*-infinitive [58], bare infinitive [59], *-ing* participle [60] and *-ed* participle¹⁷ [61].

[58] *The best thing would be to tell everybody.*

[59] *All I did was hit him on the head.*

[60] *Leaving the room, he tripped over the mat.*

[61] *Covered with confusion, they apologized abjectly.*

Even though infinitives can function as postmodifiers of noun phrases, they will be excluded from further discussion since this study focuses only on participles.

2.2.2.1 Participial clauses

Participles subsume six forms: the present participle which ends with the suffix *-ing*; the past participle, realized either by adding the suffix *-ed* or irregularly; the perfect participle that has not only a simple, but also a progressive form; and two passive participles, present and past. An overview of all the forms, employing the verb *use*, is provided below.

Figure 2: Overview of participial forms

participle		active	passive
present		<i>using</i>	<i>being used</i>
perfect	simple	<i>having used</i>	<i>having been used</i>
	progressive	<i>having been using</i>	
past		<i>used</i>	

(Dušková 2006: 270)

However, only three out of the six participial forms are capable of functioning as postmodifiers of an NP: the present participle (both active and passive) and the past participle. These forms as one of possible means of postmodification are dealt with in (2.2.2.3).

Originally, the term ‘participle’ is derived from the verb *participate* as it participates in more than one word class. It is thus extremely important for the following analytical part to be able to distinguish the participle as a verb form from other word classes.

¹⁷ Huddleston & Pullum (2002: 1173-74) recognize three main types of non-finite clause, i.e. gerund-participial (including both *-ing* participle and gerund), past-participial (corresponding to *-ed* participle) and infinitival clauses. The last type is further subdivided, based on the presence or absence of the subordinator *to*, into *to*-infinitivals and bare infinitivals.

The participial verb forms can acquire the characteristics of nouns and adjectives, such as in the noun *building*, the adjective *exciting* or *tired* (Biber et al. 1999: 100). However, if the verb form does not acquire characteristics of the above-mentioned word classes and remains the verb, it possesses the same form as such adjectives and nouns, i.e. it ends in *-ing* or *-ed*. These circumstances may lead to ambiguity, therefore it is important to distinguish between participle as a verb form and past-participial adjective [62], present-participial adjective [63] and gerundial noun [64] respectively (Huddleston & Pullum 2002: 78-81, 1187).

- [62] *It was **broken** deliberately, out of spite.* (form of verb)
*It didn't look **broken** to me.* (past-participial adjective)
*It was **broken**.* (ambiguous)
- [63] *They are **entertaining** the prime minister and her husband.* (form of verb)
*The show was **entertaining**.* (present-participial adjective)
*Her parents are **entertaining**.* (ambiguous)
- [64] *He was expelled for **killing** the birds.* (form of verb)
*She has witnessed the **killing** of the birds.* (gerundial noun)

This ambiguity can be resolved by applying several tests which are based on certain grammatical differences between verbs and adjectives and between verbs and nouns. As regards the participial verb forms, they can take noun phrases as their objects, cannot occur in verbo-nominal predications (except after the verb *be* where the participial form is ambiguous but still more in favour of the adjective reading since the verb *be* can be replaced by *seem*), and cannot be modified by degree adverbs *very* and *too* (ibid. 78-81).

Another word class having the identical form with participles is represented by prepositions. The treatment of these participial forms as a preposition is based on the absence of understood subject (Malá 2009: 53). It is evident that while in [67] the subject, i.e. *Max*, is recoverable from the main clause for the verb *counting*, there is no such operation possible in [65, 66] where the participial forms fulfill the function of preposition.

- [65] *There are five of them **counting/including** the driver.*
 [66] ***Given** his age, a shorter sentence prison is appropriate.*
 [67] ***Counting** his money before going to bed last night, Max discovered that two \$100 notes were missing.*

The prepositions which are homonymous with the participial forms include for instance *according*, *owing*, *excluding*, *pertaining*, *concerning*, *regarding* and *including* (Huddleston & Pullum 2002: 610-11).

In the present study, if unclear cases are encountered in the following analytical part, the information concerning the status provided by the dictionary and the paraphrase will be taken into account.

From the syntactic point of view, a participial clause is typically subordinate and “occurs within the structure of some larger clause and is commonly less explicit than a main clause because information which in a main clause has to be encoded in the grammatical structure can be simply inferred from the larger context” (Huddleston & Pullum 2002: 89).

From the viewpoint of function, participial clauses can be found in the function of **complementation** (here, the focus will be on verb complementation in which the participial clause acts as predication adjunct), **supplementive clause** and **modifier**¹⁸ (Quirk et al. 1985: 1126). Since there may not be a formal indicator for the respective function of the participial clause, it is reasonable to attempt to state the major characteristics (with respect to the superordinate structure) for each function, which may help to discern the postmodifying participle from other functions in the subsequent analysis.

To begin with, the fundamental characteristics concerning supplementive clauses are provided:

“They do not signal specific logical relationship, but such relationships are generally clear from the context. Subjectless supplementive clauses, *ie* those that (unlike supplementive absolute clauses¹⁹) do not have their own overt subject...the implied subject in the supplementive clause provides a link with the matrix clause rather as the relative pronoun provides a link in postmodifying relative clauses...the supplementive clause implies an accompanying circumstance to the situation described in the matrix clause. For the reader or hearer, the actual nature of accompanying circumstance has to be inferred from the context.” (Quirk et al. 1985: 1124)

Supplementive clauses may occur in initial (giving background information), medial (expressing parenthetical information), or final position (being supplementary) (Biber et al. 1999: 201). When occupying the final position within the matrix clause, the supplementive clause may become ambiguous with a participial clause functioning as complementation of the verb, as exemplified in [68]. In this construction, being a variant of complex transitive complementation, the verb is complemented by a noun in the object position which is further followed by a participle. What is typical of this pattern is that the nonfinite clause has no subject itself, but the subject is implied from the preceding noun functioning as an object of the superordinate verb:

¹⁸ Participial clauses functioning as postmodifiers are discussed in (2.2.2.2).

¹⁹ Absolute constructions are those constructions which contain a subject, e.g. *His hands gripping the door, he let out the volley of curses* (Huddleston & Pullum 2002: 1265).

“This noun phrase, which if a personal pronoun is in the objective case, is commonly termed a RAISED OBJECT: semantically, it has the role of subject of the nonfinite verb; but syntactically it is ‘raised’ from the nonfinite clause to function as object of the superordinate verb.” (Quirk et al. 1985: 1202)

By contrast, the missing subject of the supplementive clause is controlled by the subject of the matrix clause (Huddleston & Pullum 2002: 1266). Consequently, example [68] can be interpreted in two distinct ways. In the case of the supplementive clause, *I* is the implied subject of *walking across the bridge*, whereas in the case of verb complementation, *he* (cf. *him*) is the overt subject (Dušková 2006: 586). Hence, the former interpretation can be paraphrased as *I saw him while I was walking across the bridge* and the latter as *I saw him in the act of walking across the bridge*.

[68] *I saw him **walking** across the bridge.*

In addition to the two above-mentioned structures, there is also a third construction where the participial clause can also function as a noun phrase postmodifier. See example [69] and its possible interpretations:

[69] *I caught the boy **waiting** for my daughter.*

[69a] *I caught the boy while I was waiting for my daughter.* (supplementive clause)

[69b] *I caught the boy in the act of waiting for my daughter.* (verb complementation)

[69c] *I caught the boy who was waiting for my daughter.* (postmodification)

(Quirk et al. 1985: 1126)

The most problematic cases are represented by the last two sentences since here it is complicated to determine whether the missing subject of the nonfinite clause “is retrievable from the raised complement in the matrix clause”, as mentioned above, or whether it “is controlled by an antecedent in the matrix clause” (Huddleston & Pullum 2002: 1193). If the object *boy* is raised, it is a sign of verb complementation [69b]; on the contrary, if the object is controlled, the nonfinite clause functions as a postmodifier since the postmodifying participles have only controlled subjects [69c] (ibid. 1193).

2.2.2.2 Participial clauses as postmodifiers

As has been noted, there are three participial forms occurring in the function of noun phrase postmodifiers, namely the present participle²⁰, either active [70] or passive [71], and

²⁰ Even though gerund, functioning as a syntactic noun, has the identical form with the participle, it cannot occur in the function of noun phrase postmodifier (Šaldová 2005a: 22); therefore, no attention is paid to it in the present paper.

the past participle [72]. All these postmodifiers have a subject gap position, and moreover they can often be paraphrased into relative clauses (Biber et al. 1999: 630).

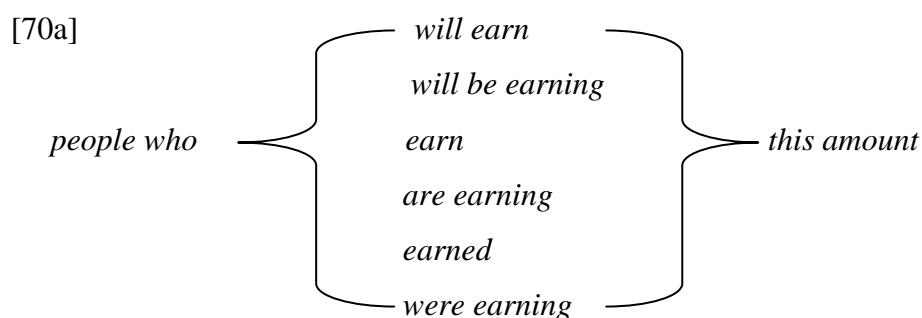
[70] [*people*] earning this amount

[71] [*the amount*] being earned by Kim

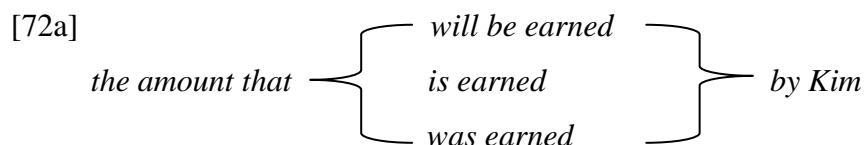
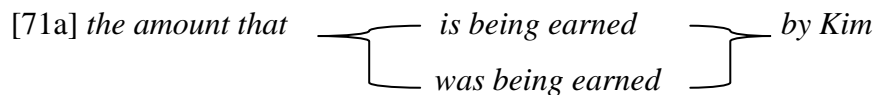
[72] [*the amount*] earned by Kim

(Huddleston & Pullum 2002: 1265)

Consequently, the nonfinite clause in example [70] may be interpreted, according to the context, to one of the possible finite versions in [70a]:



Similarly, example [71] and [72] may correspond to one of the relative clauses in [71a] and [72a] respectively.



It was also anticipated in (2.2.1.1) that relative clauses serve a discourse function of unmarked word order, i.e. subject noun phrases generally refer to given entities, while object noun phrases usually provide new information, and the same applies to restrictive participial postmodifiers. More specifically, they provide anaphoric links between sentences, as in [73], [74] and [75], in which the underlined participial clauses are in anaphoric relation to the preceding elements being in bold. The anaphoric relation does not lie in representing a new entity into the NP but in summarizing (or being lexically related to) an action of which the noun the participle modifies is the result (or is in relation to it).

[73] *The presence of an antithetic fault on the hanging wall margin can give the impression of a **symmetric rift valley** if it is exposed and forms an escarpment, **even though** the overall*

structure is **asymmetric**. [Further evidence] contradicting the traditional symmetric rift valley model comes from observations of their morphology and surface structure.

[74] Such regular **joint** patterns appear to develop when the **centres** of contraction are evenly spaced. [The lines] joining these centres represent the directions of greatest tensile stress in the lava flow as it cools, and [...].

[75] When **an earthquake occurs** [the energy] released is transmitted in wave form in all directions.

It can be observed from the above-mentioned examples that in [73] the determiners of subject NPs, being postmodified by clauses, express mainly non-anaphoric reference. In other words, the subjects are indefinite (this applies to most cases). On the contrary, in [74, 75] the subjects are generic or cataphoric (Šaldová & Malá 2010: 181-82; Šaldová 2005b: 235). In conclusion, Šaldová & Malá (2010: 182) advocate:

“It is the postmodifier part which links the new sentence and the new nominal entity with the previous context...In other than subject functions this tendency is not so strong, i.e. other than subject postmodifiers are not anaphoric to such an extent.”

-Ing clauses

-Ing clauses can often be paraphrased into their finite forms in which the relativizer functions as a subject. Moreover, *-ing* clauses are usually associated with the active voice and are less explicit than the finite relative clauses as the tense of *-ing* clauses is hardly indicated; it is either characteristically the same as that expressed in the finite clause in which the NP occurs, or it can be inferred from the context (Biber et al. 1999: 630; Quirk et al. 1985: 1264). Accordingly, examples [70, 71] may correspond to one of the version in [70a, 71a], as illustrated above.

When paraphrasing *-ing* clauses into their finite counterparts, the verbs of nonfinite clauses do not always correspond to progressive aspect verbs in finite clauses (Huddleston 1971: 250); therefore, “*-ing* forms in postmodifying clauses should not be seen as abbreviated progressive forms in relative clauses” (Quirk et al. 1985: 1263). This is applicable, for example, to stative verbs²¹ which are normally used in participial form but cannot appear in the progressive aspect in finite clauses (ibid.). As a result, the stative verb in [76] cannot be used in the corresponding finite relative clause in progressive form and is only equivalent to non-progressive tense form [76a]. In contrast, in the case the verb is dynamic [77], a paraphrase with the progressive in the finite verb phrase is possible [77a].

²¹ For stative verbs, see Dušková (2006), page 212.

[76] *Interest is now developing in [a theoretical approach] involving reflection of Alfvén waves.*

[76a] ...*[a theoretical approach] which involves.../not: **which is involving*...*

[77] *[A military jeep] traveling down Beach Road at high speed struck [a youth] crossing the street.*

[77a] *[A military jeep] which was travelling down Beach Road at high speed struck [a youth] who was crossing the street.*

(Biber et al. 1999: 630-31)

Additionally, nonfinite clauses functioning as postmodifiers of an NP cannot express the perfective aspect since only participles which do not contain the auxiliary *have* appear in modifying function:

[78] *[The man] who has won the race is my brother.*

[78a] ?* *[The man] having won the race is my brother.*

(Quirk et al. 1985: 1264)

-Ed clauses

Regarding the *-ed* clauses, the same rule applies as in *-ing* clauses: the subject element is gapped and there is no indication of tense, thus its interpretation depends on the context. Unlike *-ing* clauses, *-ed* clauses are linked with the passive voice:

“Postmodifying *ed*-clauses are often used when a full relative clause with a passive verb is a viable alternative. In these cases, the preference for participle clauses seems to be economy, since they convey essentially the same meaning as a full relative clause but use fewer words.”
(Biber et al. 1999: 632)

It may seem that the use of a full relative clause with the passive voice is unnecessary; however, there are a number of instances where a finite relative clause must be used: First, a finite relative clause is employed whenever tense, perfect aspect, or modality are important [79]. Second, when the postmodifier is detached from its head noun, a finite relative clause is preferred [80]. And third, when the gap occurs in other than the subject position, a finite relative clause is required [81]:

[79] *The mistaken view is that theory refers to [ideas] which have never been tested.*

[80] *[Valuable contributions] towards botanical classification have been made in India, which are discussed later.*

[81] *The latter carries [two parallel endless ropes], joined by spacing bars, to which are attached a series of water containers.* (ibid.)

In contrast, provided that the verb of the *-ed* participle is intransitive, which can never be passive, there is no postmodifying past participle [82a] that corresponds exactly to the finite relative clause [82] unless the participle is accompanied by certain adverbs, as in [82b,c] (Quirk et al. 1985: 1265). Such adverbs compensate for the meaning denoted by the present/past perfect meaning (Šaldová 2005b: 232).

[82] [*The train*] which has arrived at platform 1 is from New York.

[82a] ?* [*The train*] arrived at platform 1 is from New York.

[82b] [*The train*] recently arrived at platform 1 is from New York.

[82c] [*A man*] just
gone to India
come from the meeting
 told me about it.

Furthermore, contrary to *-ing* clauses which are incapable of expressing aspectual contrast, *-ed* clauses can indicate progressive aspect. Hence, the sentence in [83, 84] corresponds to the sentence in [83a, 84a] respectively:

[83] [*The food*] eaten was meant for tomorrow.

[83a] [*The food*] which was/ has been eaten was meant for tomorrow.

[84] [*The food*] being eaten was meant for tomorrow.

[84a] [*The food*] which is being eaten was meant for tomorrow.

(ibid.)

2.3 Comparison of adnominal relative clauses and participial postmodifiers

So far, the major characteristics of adnominal relative clauses and participial clauses which function as postmodifiers of noun phrases have been discussed. This section, on the contrary, focuses on aspects in which the two structures differ from each other as well as on their mutual relations, in order to provide a background to which the analyzed material can be applied.

This section thus explains why explicitness is considered to be a crucial feature in which the two structures differ (2.3.1), characterizes academic lectures and describes the difference between these lectures, academic prose and conversation (2.3.2), and provides the general distribution of individual postmodifiers (2.3.3).

2.3.1 Explicitness

As Šaldová (2005c: 59) points out “the most obvious and general difference between the two structures is described in terms of explicitness”. Explicitness occurring in

postmodification varies significantly. While greater explicitness is found in finite clauses, comprising a finite verb with indication of tense, nonfinite clauses are less explicit due to the absence of the explicit tense, modal auxiliaries, a subject (most frequently) and a subordinating conjunction. Hence, meanings associated with tense, aspect, and mood have to be recovered from the sentential context (Quirk et al. 1985: 995, 1243). Dušková (2006: 497) illustrates the increasing degree of explicitness from the least explicit PP to the most explicit finite relative clause with the nonfinite clause as an intermediary:

[85a] [*the pupil*] *in the corner*

[85b] [*the pupil*] *standing in the corner*

[85c] [*the pupil*] *who was standing in the corner*

Terms for using less explicit forms differ. Quirk et al (1985: 995), for instance, employ the term ‘syntactic compression’, whereas Hladký (1961) or Vachek (1955) prefer the term ‘complex condensation’. This term “was first used by V. Mathesius to denote an introduction into a sentence of a nominal element or phrase replacing the finite verb of a subordinate clause and so dispensing with the clausal structure altogether” (Hladký 1961: 105). Such a process of complex condensation can be illustrated on the well known English proverb *Barking dogs rarely bite*. When compared to an equivalent Czech proverb *Pes, který štěká, nekouše* (A dog that barks does not bite) where a dependent adjective-clause is used, the English present participle enables the sentence to do without this dependent clause, and thus proves that a nonfinite clause acts as a means of complex condensation (Vachek 1955: 63).

In addition, Hladký (1961: 111-112) stresses that there exist certain differences in frequency of complex condensation between the individual types of contexts: “The English narrative style is characterized by a frequent use of complex condensation and the same may be expected about the specialized style...” In conversation, on the other hand, complex condensation rarely occurs (Malá 2009: 46).

2.3.2 Register differences: academic prose vs. academic lectures

Biber (1991: 45) defines academic lectures as being delivered in the spoken mode but exhibiting literate personal situational characteristics for school acquisition, social value, shared personal knowledge among participants, and information load. Thus, “academic lectures can be classified as a literate situation” (ibid.).

From the viewpoint of register analysis, Csomay (2000) proposes that academic lectures could be characterized as a register being placed on a continuum between academic prose and face-to-face conversation:

“While lectures are highly informational in purpose, as in academic prose, they are delivered under on-line production duress. These two situational features create a ‘hybrid’ register that could be positioned on a continuum between academic prose, having high informational load, and face-to-face conversation, exhibiting features of spoken discourse.” (Csomay 2002: 204)

However, all academic lectures are not homogeneous. Taking the continuum into account, some lectures would be found closer to one end of the continuum occupied by conversation, whereas others would occur closer to the other end occupied by academic prose. This fact ensues from the different degrees to which academic lectures are interactive. To be more precise, low interactive lectures share properties with academic prose as they show more informational features. In contrast, high interactivity classes reflect more features of conversation (ibid. 204, 221-22). The reason why the written expository genres employ a greater frequency of literate features than any of the spoken genres might be ascribed primarily to the processing constraints of speech. In other words, no matter how carefully spoken genres are planned, they are still produced and comprehended in real-time, which results in setting a cognitive ceiling for the syntactic and lexical complexity that commonly occur in these genres (Biber 1991: 163).

As mentioned above, academic prose and academic lectures are both characterized by high informational load, which can be attributed to a great use of nouns: “Classroom teaching is more similar to the written registers than most other spoken registers, in that it relies on nouns to a slightly greater extent than verbs” (Biber 2006: 49).

2.3.3 Frequency and usage of individual postmodifiers

As pointed out earlier, “the complexity of noun phrases increases across the registers in a familiar order, with conversation at one extreme and academic prose at the other” (Biber et al. 1999: 578); therefore, this section presents a quantitative overview of postmodifying relative clauses with the focus on academic lectures.

As far as the overall distribution of relative clauses is concerned, they are used more frequently in the written registers²²; however, their use is markedly higher when employed in the academic classroom registers in comparison to the interpersonal academic registers²³

²² In contrast, “adverbial clauses and complement clauses are much more common in the spoken registers” (Biber 2006: 72).

²³ Interpersonal academic registers include labs, office hours, and study groups (Biber 2006: 72).

(Biber et al. 1999: 72). Generally, in spoken discourse the majority of relative clauses postmodify the antecedent which functions as the object or complement rather than the subject of a matrix clause²⁴ (Quirk 1957: 104). Furthermore, relative clauses with both subject and object gaps are common in academic prose when compared to academic lecture and face-to-face conversation where the object gap is less frequent (Csomay 2000). The situation with the subject gap is slightly different. The number of relative clauses where the subject is gapped is lower in academic lectures than in academic prose but higher than in face-to-face conversation, which places academic lectures between the other two registers²⁵. Finally, the most prominent difference between academic prose and academic lectures (together with face-to-face conversation) is in the use of zero relativizer. Unlike in academic prose, the zero relativizer appears nearly as frequently as in conversation (ibid.).

A remark should also be made on the role the NP is playing in the ongoing discourse since it is the crucial aspect the occurrence of pre- and post-modification depends on:

“The realization form appears to come into a play in the case of recurrent modified noun phrases where the modifier has alternative forms for pre- and post-modification. In this case there is a tendency for the modifier to constitute postmodification at the first occurrence of the noun phrase and shift to premodification when the modified noun phrase is reiterated.” (Dušková 2011: 28)

In other words, NPs with postmodifiers are employed most frequently for first mentions of a referent in a text, whereas NPs with premodifiers and simple nouns could be used for both first and subsequent mentions. Moreover, pronouns are used primarily for subsequent mentions. Based on these assumptions, the progression of noun phrase types, representing a gradual decrease in fullness of expression over the course of a text, may be illustrated as:

N + postmodifier > premodifiers + N > simple noun > pronoun

An actual piece of the text representing the repeated references to the noun *systems* is provided in [86].

[86] *Deterministic dynamical systems of three or more dimensions can exhibit behaviours of the type generated by the rotating taffy machine. Despite their determinism, the behaviours generated look extremely random. This is what it means to say that **such systems** are effective mixing devices. The discovery of chaos suggests that the question of whether a given random appearing behavior is at base probabilistic or deterministic may be undecidable.*

²⁴ The reason why relative clauses usually qualify the object or complement in spoken discourse is that when postmodifying the subject, “speakers have a strong tendency to anacoluthon” (Quirk 1957:104).

²⁵ “In conversation and fiction, c. 55% of all relative clauses have subject gaps ... In news and academic prose, c. 75% of all relative clauses have subject gaps...” (Biber et al. 1999: 621)

Nevertheless, it is useful and justified to look at **living systems** from the functional point of view. This is due to the enormous asymmetry between existence and nonexistence. **Some biological systems** are so organized that **they** remain in the game of life. **Others** go out of existence.

Here, the references to this noun progress from a noun phrase with both pre- and post-modifiers via premodified noun phrases to pronominal reference:

Deterministic dynamical systems of three or more dimensions → *such systems* → *living systems* → *some biological systems* → *they* → *others*

(Biber et al. 1999: 586)

As the aim of the present paper is to compare adnominal relative clauses and participial postmodifiers in written and spoken academic discourse, the data against which the comparison will be made are obtained from Šaldová's Ph.D. Thesis (2005a). Here she carried out the analysis in which she observed the dis/similarities in the usage of the two structures between two registers, i.e. fiction and academic writing. The latter domain included sample texts exemplifying natural science and social science. For the reason that the present study deals with the same constructions but in spoken academic discourse, both natural and social science²⁶, it is essential to present Šaldová's quantitative findings in order to provide a background against which the present data can be compared. These findings are summarized in the following tables where the figure expresses frequency, either in % or x instances per 1,000 words.

Table 1: Mean frequency of the relative clauses with the S gap and participial clauses

per 1,000 words	SOC	NAT	TOTAL
modifiers overall ²⁷	20.96	18.57	19.4
S gap modifiers ²⁸	14.1	15.4	15.0
relative clauses	8.0	5.4	6.3
participles	6.1	10.1	8.6

Table 2: The distribution of the types of predicates in the relative clause with the S gap

in %	SOC	NAT	TOTAL
simple VP	60.0	68.3	64.8
full VP	71.0	83.7	78.2
same tense	38.3	50.5	44.8

²⁶ Natural and social science are referred to by means of abbreviated labels: 'SOC' and 'NAT'.

²⁷ Modifiers overall include finite relative clauses with both the S gap and non-S gap and participles.

²⁸ S gap modifiers subsume finite relative clauses with the S gap and participial clauses.

Table 3: Mean frequency of nonfinite forms

per 1,000 words	SOC	NAT	TOTAL
-ing clauses	2.1	4.2	3.4
-ed clauses	4.1	5.9	5.3

Table 4: The frequency of the relative clauses in subject NP

in %	SOC	NAT	TOTAL
RC in subject NP	20.7	27.9	24.6

Table 5: The frequency of participial clauses in subject NP

in %	SOC	NAT	TOTAL
-ing clause in subject NP	27.5	31.2	30.4
-ed clause in subject NP	35.7	42.7	40.7

Table 6: The frequency of relative pronouns

in %	SOC	NAT
<i>who</i>	9.8	1.6
<i>zero</i>	3.6	1.2
<i>that</i>	9.6	15.2
<i>which</i>	70.2	64.6

3. MATERIAL AND METHOD

This section describes methodology employed in the present study and presents overall quantitative results.

3.1 Material

The aim of the paper is to compare two postmodifying constructions in NPs - the finite relative adnominal clauses with the subject gap and the nonfinite participial clauses – in spoken academic discourse: natural and social science.

Firstly, the two postmodifying constructions will be compared in written (Šaldová 2005) and spoken discourse. Secondly, attention will be paid to their distribution across the two subregisters as well as to the factors that may have an impact on the choice of a finite versus nonfinite structure, and an attempt will be made to ascertain whether similar differences (both in quantitative and qualitative aspects) in the use of the finite and nonfinite postmodifiers are observable between the two subregisters (natural and social science) of spoken discourse.

The material studied draws on four lectures (two representing social science and two representing natural science) extracted from transcripts available in the BASE (*British Academic Spoken English*) corpus which was developed at the Universities of Warwick and Reading by Hilary Nesi and Paul Thompson. The BASE corpus contains transcripts of both lectures and seminars recorded at two universities in the United Kingdom during the period of 1998-2005. It is a collection of 160 lectures and 39 seminars recorded in diverse departments of the two universities. Transcripts are divided into four disciplinary groups, each represented by 40 lectures and 10 seminars. These groups encompass Arts and Humanities, Life and Medical Sciences, Physical Sciences and Social Studies and Sciences. Transcripts in each group are labelled with five letters and three digits where the first two letters signify the disciplinary group, the next three indicate whether it is a transcript of a lecture or a seminar, and the following digits are unique identifiers (Nesi & Thompson 2006: 1). See an overview of the file names below:

Figure 3: Overview of the transcript labels

ah [Arts and Humanities]	lct [lecture]	0nn
ls [Life and Medical Sciences]		
ps [Physical Sciences]	sem [seminar]	
ss [Social Studies and Sciences]		

(Nesi & Thompson 2006: 1)

Transcripts of spoken language are characterized by several properties that distinguish them from written language, i.e. capitalization is reduced to proper names; diacritics are not employed to mark grammatical units as in the written discourse; and nonlexical items are included, such as pause fillers (*er*), or surprise particles (*oh*)²⁹. Furthermore, each transcript in the BASE corpus is available with or without pause information.

The material for the study includes four lectures, two from each subregister. The list of the source transcripts together with their identifying symbols (for the purpose of the subsequent analysis) and their origin are presented in Figure 4.

Figure 4: The list of source transcripts

symbol	Title	file name in BASE
	Social Science (SOC)	
AL	The Academic Landscape	ahlct032
MM	Marx and Marxism	ahlct026
	Natural Science (NAT)	
MD	Methods and Developments in Plant Breeding	lslct001
ST	The Science of Transplantation	lslct011

The criteria according to which the source transcripts were chosen are as follows: First, they correspond to the registers studied by Šaldová³⁰ (2005a) as regards the subject matter discussed (i.e. social and natural sciences³¹) since the aim of the study is the comparison of written academic texts and transcripts of comparable spoken academic registers. Second, as the spoken academic monologue is desired here, lectures were chosen to display minimal interactivity. And third, as we examine clausal postmodification in NPs, an attempt was made to exclude transcripts with markedly short utterances and a high number of features typical of conversation³² since we are primarily interested in spoken monologues.

The analysis proper was carried out on the basis of 200 examples of postmodifying constructions (adnominal relative clauses with the subject gap and participial clauses), i.e. 100 examples of the two structures were drawn from each subregister, recording 50 subsequent examples from each transcript. These 50 examples of postmodification thus served as the

²⁹ For specific conventions used in the BASE corpus, see The British Academic Spoken English Corpus Manual (2006), page 3.

³⁰ The texts for academic writing chosen by Šaldová include two subregisters – social sciences and natural sciences. The former is represented by *Political sociology* (Bottomore 1993) and *Sociolinguistics* (Hudson 1996) and the latter by *Tropical rainforest ecology* (Mabberley 1992) and *Global geomorphology* (Summerfield 1991).

³¹ The respective subregisters are occasionally referred to by means of abbreviated labels: ‘SOC’ and ‘NAT’.

³² These features include speech errors, such as slips of the tongue or hesitation features – “the more one is thinking what to say, the more likely hesitation features are to appear” (Crystal and Davy 1969: 104). Moreover, utterances are often incomplete which results in disjointedness (ibid. 103-111).

measure for determining the length of the excerpted transcripts in which also all other instances of postmodification by relative clauses with other than subject gap were simultaneously collected. The excerption of such clauses (finite relative clauses with other than subject gap)³³ was desired in order to determine whether the nature of academic lectures is more of academic prose or more of conversation since, as noted in (2.3.3), academic lectures appear on a continuum between academic prose and face-to-face conversation and it is the type of gap that may identify to which end of the continuum the academic lectures occur closer. It should be, however, stressed that special attention in the present paper is drawn to relative clauses with the subject gap and their participial counterparts as the aim of the study is to compare these two constructions.

Furthermore, in order to ensure that the spoken and written material is comparable as much as possible, the examination of the constructions in each transcript began from the point where the discussion of the actual topic started, i.e. the introductory information concerning the management of class was excluded. See the following extract from the lecture on Marx and Marxism (MM); the actual analysis started from the point indicated by an arrow:

(1) well good morning everybody er last year i volunteered or was volunteered to give this lecture because somebody was on leave that somebody's come back and apparently i'm still giving the lecture i don't know how that happened but here i am and → what i'm going to talk about is Marxism er and Marxist historiography since Marx linking up with what namex said last week and i think one of the points that er is very important about Marx is that Marx's ideas and i i think namex mentioned this last week are a sort of unique fusion of two separate categories of thinking (MM)

The examples included in the analysis were assigned a two-letter symbol indicating their origin (cf. Figure 4) and an identification number, which facilitates the retrieval of the examined structure in the appendix and provides a reference to the particular example. The codes of the texts from which the examples were extracted are placed before the studied construction in the superscript format. All the constructions in question are underlined for the sake of clarity. Thus, in example (2) the superscript indicates that the example is retrieved from a text labelled *MM* and the construction in that text is identified as example 1:

(2) i think one of the points ^{MM-01}that er is very important about Marx is that Marx's ideas and i i think namex mentioned this last week are a sort of unique fusion of two separate categories of thinking

³³ There were altogether 284 postmodifying clausus excerpted from the material under study.

3.2. Method

As already noted above, 50 postmodifying constructions, both finite relative clauses with the subject gap and participles, were excerpted from each transcript (that makes up 100 structures from each subregister). However, in order to accomplish this task and to resolve some problematic cases as regards the quantitative aspect, several criteria had to be established. This primarily concerns delimiting participial clauses functioning as postmodifiers since participles may perform various other functions (cf. 2.2.2.1), and the way of how examples of postmodifying coordinated clauses were treated.

As far as the coordinated finite relative clauses are concerned, it was the presence or absence of the relative pronoun that represented the main criterion for distinguishing between coordinated clauses and coordinated predicates. This ensues from Quirk et al. (1985: 946-50) who classify only those clauses to be coordinated which share no element. Hence, each relative clause introduced by a relative pronoun was considered to be a separate example, and thus counted as a separate instance:

(3) you got to look for ones ^{MD-24}that grow well for instance without high nitrogen inputs
^{MD-25}that possibly do grow quite well competitively with weeds that are resistant to many of the pests and diseases

In contrast, for instance examples (4) and (5) are classified as one postmodifying structure, due to the coordinated predicates and a shared relative pronoun:

(4) she was describing to me the sort of facial reconstructions that happen in severe burn patients er i-, or severe or in situations ^{ST-12}where there's been a severe d-, dec-, severe accident and there's been extensive damage say to the face

(5) you expect the thing to be grown if it's going to be grown in a high input system then you will have cultivars ^{MD-55}that will respond and grow in that situation

Participial clauses, on the other hand, posed no such a problem, therefore all participles functioning as postmodifiers were included in the count:

(6) the reason for this was that ownership of capital ownership of the means of production was not as Marx thought polarizing through competition ^{MM-31}driving poor er er sec-, er er failed producers out of the market and ^{MM-32}creating a smaller and smaller number of big er successful producers

In addition, relative clauses postmodifying an ellipted noun were also counted:

(7) firstly of course simply that Valenciennes er stresses the importance of looking at nature and of making these sketches en plein air in the open and here's two ^{AL-60}he did in Rome

The other aim of this section is to present criteria based on which the participial postmodifiers were delimited in the present study. From the syntactic point of view,

participles are treated as postmodifiers as they can often be paraphrased into finite relative clauses but only to those relative clauses in which the relative pronoun is subject (cf. 2.2.2.2):

(8) here's two examples of French landscape painters ^{AL-36}working in Rome one an unfinished sketch the other a highly finished picture

(8') > here's two examples of French landscape painters who work/are working in Rome one an unfinished sketch the other a highly finished picture

(9) so clearly there's someth-, something ^{AL-53}invested here to do with national identity and sort of the French cultural prowess

(9') > so clearly there's someth-, something which was invested here to do with national identity and sort of the French cultural prowess

Apart from the substitution test, the postmodifying character of a participle is also suggested by a coordination of participles and relative clauses, which is illustrated by example 10.

(10) this is Ideal Landscape with Washerwomen from eighteen-o-seven but more important than Valenciennes' painting was a textbook ^{AL-15}he published in eighteen-hundred ^{AL-16}called Elements of Practical Perspective ^{AL-17}which proved to be a very influential work right the way through the nineteenth century

However, not all cases of postmodifying participles can be easily discriminated (as those above) from other syntactic functions. As already anticipated (cf. 2.2.2.1), the most problematic case is represented by a participle following an object in complex transitive complementation (a particular type of verb + an object noun + participle). In both structures there is no overt subject; the difference lies in the fact that while the missing subject of a postmodifying participle is controlled by an antecedent in the main clause, the missing subject of a complementing participle is 'raised' (from the nonfinite clause to function as object of the superordinate verb). Another difference between postmodification and verb complementation can be spotted in the type of the superordinate verb employed; the verbs that appear with present participles as verbal complements include verbs of perception (*see, hear, feel, smell, observe, watch, witness*), causative verbs (*send, sent, have and get*), and other verbs, such as *catch, come upon, describe, discover, find, keep, leave and paint* (Dušková 2006: 587), and the verbs that occur with past participles subsume causative verbs (*get, have*), volitional verbs (*want, need, like*) and perceptual verbs (*see, hear, feel and watch*) (Quirk et al. 1985: 1297). The main criterion, however, for distinguishing instances between postmodification and verbal complementation was the possibility of paraphrasing the participle either by a relative clause (in the case of postmodification) or by a nominal content *that*-clause (in the case of verbal complementation), as is illustrated by examples (11) and (12). While the former is an instance of verbal complementation due to the type of the

superordinate verb used (cf. *see*) and the possible paraphrase by a nominal content *that*-clause, the latter represents a clear example of postmodification.

(11) there were i mean today we see a capitalism of giant corporations ^{MM-45}bestriding the globe larger than nation states holding nation states to ransom

(11') > there were i mean today we see that a capitalism of giant corporations bestrides the globe larger than nation states holds nation states to ransom

(12) it's with this background in mind that i want to talk particularly about two aspects ^{MM-09}really following from this

(12') > it's with this background in mind that i want to talk particularly about two aspects which really follow from this

Another problematic area involves instances of absolute constructions since in several participial clauses found in the excerpted material it was complicated to discriminate between absolute constructions and a modified noun in apposition³⁴. Absolute constructions are subordinate constructions which not only contain an overt subject but also have no syntactic link to the matrix clause (Huddleston & Pullum 2002: 1265-66).

The criteria according to which the particular instances were included among postmodifiers are as follows: First, the participial clauses can be paraphrased into finite relative clauses and the modified noun is explicitly bound to the main clause element, therefore example (13) was counted:

(13) the first stage of development of Marxist ideas brings it into this rather er schematic positivist influenced er rule based idea of controlling history **history** ^{MM-25}working directly through laws and those laws being readily perceptible er and readily er understandable

In contrast, example (14) was identified as having no syntactic link to the main clause, and thus not included in the count.

(14) the economic interpretation argued the fundamental factor on which all other fac-, social factors depended was er economy particularly the means of production er and ownership of it the means of production in different societies ^{MM-17}being land in feudal society machines and industrial society capital and labour er capital in capitalist society labour in in a number of other societies as well;

Second, even though Malá (2004: 81-82) classifies those examples as absolutes in which the overt subject is either fully coreferential with a matrix clause element as in example (15) (her example 41), or is not fully coreferential with a matrix clause element as in example (16) (her example 50), the following instance obtained from the studied material (17) was included among postmodifiers since *each*, *both*, *all* are commonly used as appositives in other constructions (Dušková 2006: 502):

³⁴ For a discussion on apposition, see 4.1.3.1.

(15) In Seascale there were two cases of non-Hodgkin lymphoma, **both** occurring in ages 55-64.

(16) **Most cutters** engage in the behavior on several occasions, **some** cutting themselves hundreds of time altogether.

(17) here's two examples of French landscape painters working in Rome one an unfinished sketch the other a highly finished picture er **both** ^{AL-37} showing one of the French artists' favourite subjects the Colosseum

It is also important to stress that on account of the absence of tape recordings of the academic lectures intended for examination, as well as the absence of diacritics in the transcripts, especially commas separating individual grammatical units which are crucial for identifying restrictive vs. nonrestrictive postmodifiers, restrictiveness is not taken into account in the present study.

3.3. Frequency of occurrence of postmodifying structures

As was already stated, 50 examples of relative clauses with the subject gap and the corresponding participial clauses were excerpted from each transcript, which served as the measure for determining the length of the excerpted transcripts. The table below shows the number of words needed for obtaining these 50 postmodifying structures from each of the extracted material. It also needs to be stressed that for the purpose of achieving sufficient accuracy, all pause fillers, surprise particles and unfinished words were excluded from the word count.

Table 7: The number of words needed per 50 postmodifying clauses excerpted³⁵

	social sciences		natural sciences		TOTAL
	AL	MM	MD	ST	
number of words	2,928	3,458	4,285	4,582	15,253
average	3,193		4,434		

The following tables show the frequency of all postmodifying clauses, i.e. finite relative clauses with the subject and nonsubject gap and participial clauses, in the respective transcripts. Table 8 illustrates the overall number of all clausal postmodifiers obtained from the material under study, whereas numbers in Table 9 represent the frequency of postmodifying constructions per 1,000 words.

³⁵ Only finite relative clauses with the S gap and participial clauses are included.

Table 8: The number of all postmodifying structures excerpted

	social sciences				natural sciences				TOTAL	
	AL		MM		MD		ST		abs	%
	abs	%	abs	%	abs	%	abs	%		
FINITE	41	66.1	58	80.6	74	90.2	62	91.2	235	82.7
NONFINITE	21	33.9	14	19.4	8	9.8	6	8.8	49	17.3
TOTAL	62	100%	72	100%	82	100%	68	100%	284	100%

Table 9: Mean frequency of all clauses in the individual transcripts

per 1,000 words	social sciences		natural sciences	
	AL	MM	MD	ST
FINITE	14.00	16.77	17.27	13.53
NONFINITE	7.17	4.05	1.87	1.31
OVERALL	21.18	20.82	19.14	14.84

The figures in Table 9 suggest that the frequency of postmodifying clauses is slightly higher in social sciences than in natural sciences, which is confirmed by the following table:

Table 10: Mean frequency of all finite relative clauses and participles per 1,000 words

	social sciences	natural sciences
abs	134	150
per 1,000 words	21.00	16.92

Another difference may be observed in the use of participles between the two subregisters; nonfinite clauses are slightly more frequent in social sciences than in natural sciences. However, the overall frequency of postmodifying participles is fairly low in comparison to finite clauses.

So far, the overall tendencies in the use of finite relative clauses and their participial counterparts have been exhibited. In the following chapters, attention is paid to differences between the subregisters exemplified in the studied material. It mainly concerns the types of structures, their syntactic and semantic functions and their lexical preferences.

4. ANALYSIS

The present chapter provides analyses of finite relative clauses and participial structures functioning as postmodifiers of noun phrases. The chapter contains four sections. While in section (4.1) results for finite relative clauses are presented, participial postmodifiers are discussed in (4.2). Multiple postmodification observed in our data is commented on in (4.3.). Section (4.4) compares finite relative clauses and their reduced counterparts in terms of quantity as well as the qualitative features. The findings for spoken and written (Šaldová 2005a) discourse are also compared.

4.1 Relative clauses

This section analyses the finite relative clauses found in the material under study. It is subdivided into three sections. Section (4.1.1) provides an overview of syntactic positions the relativizer occupies in the relative clause. The distribution of the relativizers together with their description is analysed in section (4.1.2). Main attention is, however, paid to clauses with the subject gap, which are dealt with in (4.1.3). These relative clauses are then described in terms of the syntactic function the modified noun performs in the main clause (4.1.3.1) and in terms of the type of the verb phrase (4.1.3.2).

4.1.1 The syntactic function of the relativizer in the relative clause

The present section discusses the role the relative pronoun occupies in the subordinate clause. As already anticipated in (3.1), the character of academic lectures may be determined according to the frequency of the finite relative clauses with the subject gap; provided that the prevalence of finite relative clauses in the studied material have a relative pronoun in the subject position, i.e. approximately 75% (Biber et al. 1999: 621), it may be claimed that academic lectures display a more ‘academic-prose-like’ character in this respect.

Relative clauses are thus divided into two groups – relative clauses with their relativizer in the subject position and clauses where the relativizer has a nonsubject function; such a division is also made because finite relative clauses with the relative pronoun occupying the subject position can be seen in closest relation to participial clauses functioning as postmodifiers: “The correspondence between *-ing* clauses and relative clauses is limited to those relative clauses in which the relative pronoun is subject ... [As regards *-ed* clauses],

there is correspondence only with relative clauses that have the relative pronoun as subject.”³⁶ (Quirk et al. 1985: 1263-64) The syntactic positions which the relativizer occupies in the material under examination subsume: subject³⁷, object, subject complement, adverbial (including adverbial as prepositional complement) and possessive determiner.

The following table shows the proportion of clause elements relativized in the dependent clause:

Table 11: The proportion of the type of gap in the relative clause

type of gap	abs	%
subject gap	151	64.3
nonsubject gap	84	35.7
TOTAL	235	100%

As the results in the table above show, in 151 out of all 235 relative clauses (i.e. 64.3%) the relativizer functions as subject. Based on the data provided by Biber et al. (1999: 621) that relative clauses with the subject gap in conversation accounts approximately for 55% of all relative clauses, whereas in academic prose they make up 75%, the proportion of the subject gap (64.3%) suggests that our academic lectures do not incline unequivocally to any of the two register modes, falling roughly in between. It is also quite surprising that at a closer examination, the proportion of relative clauses with the subject and nonsubject gap is completely balanced in the two subregisters. See the following table:

Table 12: The distribution of the type of gap across the subregisters

	social science		natural science		academic	
	abs	%	abs	%	abs	%
subject gap	65	65.7	86	63.2	151	64.3
nonsubject gap	34	34.3	50	36.8	84	35.7
TOTAL	99	100%	136	100%	235	100%

Relative clauses with the relative pronoun in the subject position typically fulfils the informational purposes of written exposition (cf. 2.2.1.1), i.e. the subject of the relative clause is commonly known and nonsubject noun phrase elements in the dependent clause identify the reference of the head noun and provide more information about it. This pattern can be observed in example (18) where the clause elements in bold facilitate the identification of the noun phrase head.

³⁶ Hence, these two constructions are of primary interest to the present study.

³⁷ This role applies also to relativizers in dependent clauses with sentential relatives.

(18) when the weather is fine we go into the country together there i give him my views on how to make studies ^{AL-58}that may serve him later in composing pictures

In contrast, when the relative pronoun occurs in the nonsubject position, the finite relative clause serves to associate the antecedent with the given entity occurring in the subject position:

(19) there are however as i pointed out at the start were **the number of other factors** ^{MD-64}that you need to worry about

To conclude this section, we can state that the higher proportion of the subject gap in the sample (when compared to conversation) may be attributed to a more complicated subject matter, i.e. academic lectures display a more technical character in comparison to face-to-face conversation.

4.1.2 Distribution of relativizers

The distribution of the relativizers varies significantly across registers. This section thus focuses on the types and frequency of the relativizers as they are represented in the sample, and attempts to determine to which register, whether academic prose or face-to-face conversation, the excerpted material inclines in this respect.

The relativizers, signalling subordinate relative clauses, can be realized by a pronoun (*which, who, whom, that*), a determiner (*whose*), an adverb proform (*where, when, why*), or the relativizer can be omitted in nonsubject gap relative clauses (referred to as the zero relativizer) (cf. 2.2.1.1).

Relative clauses in the examined material contain all the above-mentioned relativizers. The distribution of all the relativizers found in the sample is summarized in Table 13.

Table 13: The distribution of relativizers

	social science		natural science		TOTAL	
	abs	%	abs	%	abs	%
<i>which</i>	42	42.5	52	38.1	94	40.0
<i>who</i>	24	24.2	11	8.1	35	14.9
<i>that</i>	19	19.2	57	42.0	76	32.3
zero	8	8.1	11	8.1	19	8.1
<i>where</i>	2	2.0	5	3.7	7	3.0
<i>why</i>	2	2.0	0	0	2	0.9
<i>whose</i>	1	1.0	0	0	1	0.4
<i>whom</i>	1	1.0	0	0	1	0.4
TOTAL	99	100%	136	100%	235	100%

Overall, the relative pronoun *which* is indisputably the most frequent relative in the material (40%), followed by *that* (32.3%) and *who* (together with *whose* and *whom* accounting for 15.7%). Zero relative (8.1%) is, on the other hand, much less common in comparison to *which*. Thus, based on the results provided by Biber et al. (1999: 611), claiming that the relative pronoun *which* is the most frequent in academic prose, whereas in conversation it is relatively rare, we may state that academic lectures incline more towards academic prose as *which* relative displays its predominance in the sample. Additionally, the remaining relative proforms *where* and *why* are infrequent as they constitute only 3% or less.

As for the individual subregisters, they do not differ significantly; the only difference can be observed in the higher proportion of *that* in natural science and of *who* in social science. The latter is reflected by the different character of the subject matter (personal head noun) discussed in the two subregisters of academic lectures.

In what follows, we concentrate on a brief description of the individual relative pronouns occurring in the relative clause. Quantitative overview of relative pronouns occurring in the respective type of gap is provided in Table 14.

Table 14: The distribution of relativizers in the subject and nonsubject gap clauses

	subject gap		nonsubject gap		TOTAL	
	abs	%	abs	%	abs	%
<i>which</i>	68	45.0	26	31.0	94	40.0
<i>who</i>	35	23.2	0	0	35	14.9
<i>that</i>	48	31.8	28	33.3	76	32.3
<i>zero</i>	0	0	19	22.6	19	8.1
<i>where</i>	0	0	7	8.3	7	3.0
<i>why</i>	0	0	2	2.4	2	0.9
<i>whose</i>	0	0	1	1.2	1	0.4
<i>whom</i>	0	0	1	1.2	1	0.4
TOTAL	151	100%	84	100%	235	100%

who

The relative pronoun *who* exclusively occurs in the subject position within the relative clause. Represented by 35 instances, *who* constitutes 14.9% of all relative pronouns found in our data. Although it is usually used with human head nouns, the examined material contains one example in which the relative *who* refers to the collective noun (20). This fact might be ascribed to the natural tendency to view *body*, denoting ‘fleet of trained people’ in this

particular case, as consisting of human beings. This might be also the reason why the noun *body* is actually used figuratively as an equivalent for the noun *organization*. Another feature which example (20) displays is the NP with postmodification in apposition to the preceding noun phrase³⁸.

(20) so this is in a way the first instalment of a trilogy now in the Academy the powerful ruling body of French art ^{AL-09}who organize training and production

whom

The relative *whom* represents the objective form of *who*. Compared to its subjective form, *whom* is very rare as it is found only in 1 instance (0.4%) in both subregisters.

(21) ...it was also the home of course of the great masters most notably Raphael ^{AL-}³⁵whom the French Academy absolutely er deified

whose

The other morphological form of *who* is represented by *whose*, which is used as a determiner in order to express the genitive case referring to the personal antecedent. In our data, there is only one occurrence of this relativizer, constituting again 0.4% of all relativizers.

(22) this is by Cogniet ^{AL-33}whose painting we looked at you remember in the seminars a few weeks ago this is called The Artist

which

Which is by far the most frequent relativizer in our data, with 68 instances (45%) occurring in the subject gap and 26 instances (31%) in the nonsubject position. Its high frequency may be due to the variety of syntactic functions it can perform. When used as subject in the relative clause, it represents the opposition of *who* in terms of gender of the head noun as it usually refers to inanimate antecedents. Apart from occurring in the position of subject, object, adverbial and subject complement in the sample, *which* is the only relativizer that can be used in relative clauses with sentential antecedents³⁹.

that

The relative pronoun *that* is equally distributed across the two subregisters in terms of its syntactic role within the relative clause, i.e. subject gap (31.8%) vs. nonsubject gap (33.3%). Assuming that it appears in the nonsubject position, it is fairly common to omit the relative pronoun altogether. Unlike *which*, *that* relative cannot follow the preposition in the case it functions as a complement of a preposition, and the preposition must be deferred.

³⁸ For discussion on apposition, see 4.1.3.1.

³⁹ Sentential relatives are rare in academic lectures as they account for 4% (cf. below).

zero

As noted in (2.2.1.1), relative pronouns can be omitted in nonsubject relative clauses, by which the choice among relativizers can be avoided. In our data, proportionally the frequency of a zero relativizer in both subregisters is precisely the same, i.e. 8.1%.

The zero relative is strongly preferred in instances where the subject of the relative clause is realized by a personal pronoun:

“This is because most pronouns distinguish between subject (nominative) and object forms (e.g. *I, she, he* v. *me, her, him*), and so the presence of a subject pronoun unambiguously marks the beginning of a new clause. Thus these pronouns provide a grammatical clue for the beginning of the relative clause, even without the relativizer.” (Biber et al. 1999: 621)

This is attested in all 19 instances found in the material under study (e.g. (23)).

(23) they transplant bits of bone er from the femur or a humerus or something like that to reconstruct the bone and muscle ^{ST-13}they get from somewhere else

where, when and why

Like the zero relative, adverbial *wh*-forms cannot operate as subjects since they introduce solely relative clauses of place, time and reason respectively. For these adverbial expressions of place, time and cause, there is also a choice between the relative adverb and the sequence “preposition + pronoun” (Quirk et al. 1985: 1245-54) as is illustrated by example (24):

(24) graft rejection is the er phenomenon ^{ST-52}in which the transplanted organ er is damaged fails through large-scale inflammation er and then literally starts to fall apart under immunological attack

(24') > graft rejection is the er phenomenon where the transplanted organ er is damaged fails through large-scale inflammation er and then literally starts to fall apart under immunological attack

4.1.3 Relative clauses with the relativizer in the subject position

As finite relative clauses with the subject gap are in the closest relation to participial clauses (cf. 4.1.1) and as the aim of the present study is the comparison of these two structures, attention of this section is paid exclusively to relative clauses with the relativizer in the subject gap. Out of all 235 finite relative clauses, 151 (64.3%) contain the relativizer in the subject position.

This section is divided into two parts: (4.1.3.1) examines the syntactic function of the postmodified noun phrase in the superordinate structure to see whether there is a difference in noun phrases postmodified by finite relative clauses and noun phrases with participial postmodifiers in terms of the syntactic role the NPs tend to perform; (4.1.3.2) describes the

predicator in the relative clause in terms of the complexity of the verb phrase and tense relations between the main clause and the subordinate clause, as these factors were identified as relevant for the use of the finite vs nonfinite forms (cf. Šaldová 2005a: 80-101).

4.1.3.1 The syntactic function of the postmodified noun phrase in the matrix clause

Even though the antecedent of a relative clause can occupy any syntactic position, the major distinction is between subject and nonsubject heads (Biber et al. 1999: 623). Since relative clauses with subject heads tend to disrupt the matrix clause and thus hearers/readers must process the relative clause before reaching the main verb of the main clause, subject noun phrases are rarely postmodified by a relative clause – “only 10-15% of the time across registers” (ibid.). In contrast, relative clauses with nonsubject heads are placed after the main clause verb and this position is strongly preferred because “it does not interrupt the flow of the matrix clause and is in keeping with the principle of end weight” (ibid).

However, no comparable data concerning this tendency for participial postmodifiers are given; therefore it is desirable to compare the two structures exemplified in our data.

For the purpose of determining the syntactic role which the NPs containing postmodification perform in the matrix clause, two criteria had to be established according to which the particular function of the NP was recognized. These criteria were adopted from Šaldová (2005a). First, in the case that a noun phrase, occurring after a preposition, postmodifies another noun phrase, the structure is viewed as a whole and its syntactic function is determined within the immediately superordinate clause. Accordingly, the following noun phrases are identified as subject (25), object (26) and subject complement (27) respectively:

(25) it meant that [the kind of processes ^{MM-14}which were going on with Marx's ideas towards the end of his life and certainly after his death in eighteen-eighty-one] were ones which er w-, which er were not er in his view following up the main i-, the main er essence of his ideas

(26) the professional historical landscape painter is connected to [a southern tradition of the Italian landscape ^{AL-28}which stretches back to Roman history and Greek history] while the more artisanal rural landscape painter belongs to a northern tradition exemplified by Dutch and Flemish artists

(27) now blood transfusion is obviously [a kind of graft ^{ST-17}which has been in use for a very long time]

Second, not only single noun phrases but also noun phrases occurring as complements of a preposition may function as adverbials (28, 29). In these cases, the prepositional phrases are immediate clause elements in comparison to examples in (25-27) where the prepositional

phrases function as postmodifiers. Thus, the distinction between NPs and PPs is disregarded here.

(28) you can see at once that the debt to Claude in terms of composition is enormous in terms of the er planar organization also **in** [the structure of light ^{AL-49}that became very traditional]

(29) the first stage in this process really was one which began **with** not Marx himself so much but Engels and [the person ^{MM-13}who became the leading figure in Marxist philosophy after er after Marx Karl Kautsky the leader of the s-, German Social Democratic Party]

The same principle was applied also to objects realized by a prepositional phrase.

The division of syntactic functions of head nouns suggested by Biber et al. (1999) is adhered to here, i.e. the division into subject and nonsubject heads, as the primary concern is to observe any possible differences between the modified noun in preverbal and postverbal position. It should be, however, stressed that despite the postverbal position, the modified NPs functioning as subject in *there* constructions (9 instances) were counted among the subject head nouns. The actual numbers of the respective syntactic roles are summarized in the following table.

Table 15: The syntactic function of the NP containing a finite postmodifier

	social science		natural science		TOTAL	
	abs	%	abs	%	abs	%
subject head	15	23.1	17	19.8	32	21.2
nonsubject head	50	76.9	69	80.2	119	78.8
TOTAL	65	100%	86	100%	151	100%

As Table 15 shows, 21.2% of noun phrases postmodified by the finite relative clause with the subject gap operate as subject in the higher clause. Comparing to the results published by Biber et al. (10-15%), our percentage is slightly higher. This may be ascribed to the fact that for the purposes of the present study, i.e. the comparison of relative clauses with the S gap and their participial counterparts, relative clauses with the nonsubject gap were excluded. Another possible explanation may be that the modified nouns occupying the subject position in *there* constructions were included, and thus the preverbal vs. postverbal position was disregarded in this case. As far as the syntactic function of the modified noun across the two subregisters is concerned, the differences in the social and natural science lectures are negligible.

Before proceeding to a brief description of the syntactic functions the postmodified nouns perform in the main clause, we concentrate on another prominent feature which

characterizes academic lectures, i.e. a significant number (7%) of the noun phrases postmodified by a finite relative clause with the S gap occur in an appositional relation to a noun phrase constituent.

One unit is in apposition to another when they form a specific type of coordinated linking and at once they both perform the same syntactic role. From the semantic point of view, “for units to be appositives, they must normally be identical in reference or else the reference of one must be included in the reference of the other” (Quirk 1973: 276). According to Quirk et al. (1985: 1300-21), there are several types of appositive relation; the salient types, particularly those exemplified in our data, are presented here.

The first type (strict restrictive apposition) includes two NPs, the first preceded by a definite determiner and more general in meaning than the second appositive, which is followed by a relative clause:

(30) now people you will recollect the use of the world word allele ^{ST-14}which means different

The second type found in our data is two NPs being in strict nonrestrictive apposition where “the two appositive units contribute relatively independent information” (Quirk *ibid.* 1304). From the semantic point of view, the two appositives may occur in different types of relationships, namely equivalence, inclusion and attribution. When the two appositives occur in an equivalence relationship, the insertion of *that is* or *in other words* is possible. This type of relationship is further divided into appellation, identification, designation⁴⁰ (20) and reformulation⁴¹ (31). In an inclusion relationship, the reference of the first appositive is not identical with that of the second, but rather includes it. Inclusion subsumes two subtypes, i. e. exemplification⁴² (32) and particularization. Finally, the relationship of attribution is characterized by the second appositive being commonly an indefinite NP (33).

(31) now experience with patients who've been transplanted implies has told us taught us that there are actually three forms of rejection three different kinds of rejection er ^{ST-60}which are described as hyperacute and acute and chronic

(32) and you had people who were social analysts Montesquieu er Adam Smith ^{MM-07}who were not in the true sense philosophers

(33) the er person er who engendered a number of these ideas is er Rudolf Hilferding a an Austrian economist and socialist er ^{MM-44}who himself ended up more of a Bernsteinian than a revolutionary

⁴⁰ Designation, the subtype of equivalence, is a relationship where the second appositive is less specific than the first one and both NPs are usually definite.

⁴¹ In reformulation, the second appositive represents a rewording of the lexical content of the first appositive.

⁴² In exemplification, the second NP exemplifies the reference of the more general term in the first NP.

Another syntactically different type of apposition involves cases where the antecedent postmodified by a relative clause is realized by substitute pro-forms. The pro-form *those* found in the sample is always followed by restrictive postmodification (ibid. 872):

(34) now donors are going to fall into two main categories those ^{ST-06}that are alive and those ^{ST-07}that are dead

In what follows, we concentrate on a brief description of the syntactic position the postmodified NP occupies in the matrix clause and its characteristic properties in that position exemplified in the sample. Two NPs occurring in the appositional relationship, as illustrated above, can perform any of the following syntactic functions.

Subject head (NP)

One fifth of the NPs postmodified by finite relative clauses with the S gap functions as subject in the matrix clause. In all of these instances with the exception of *there* constructions, the NPs occupy the preverbal position:

(35) individuals ^{ST-26}who have failed bone marrow er are going to be very sick er and a life saving treatment is the trans plantation of bone marrow into those individuals

In *there* constructions, the subject (i.e. the notional subject) is placed after the verb and represents the newly introduced element. Unlike in existential *there* constructions (36), existential-locative *there* constructions (37) are characterized by a distinct word order as a postmodifying relative clause often follows the locative element, which is in agreement with the informational principle and the principle of end-weight since the postmodifier is usually more complex and informative than the adverbial (cf. Biber et al. 1999: 950). However, in our data there is one example with the locative element placed before the postmodified noun in the subject proper position (38). This might be due to the fact that the locative element is itself postmodified by a PP; thus, the speaker attempted not to disrupt the continuity and to avoid ambiguity since it would not be clear which element the relative clause postmodifies (whether *an antigen* or *the surface*).

(36) there's another tree or a s-, bit of foliage further back which marks a middle plane and then there's a kind of horizon line ^{AL-47}which marks a er a plane at the back

(37) this is because there are **alloantigens** on the in the and on the graft ^{ST-53}which are different from the self-antigens

(38) there are on the surface there is on the surface of red cells **an antigen** ^{ST-20}which occurs in three er allelic forms there's the A form the B form and the null or zero form

Similar discontinuities (as in (37)) are also found in utterances with the regular word order (S-V) where the postmodifying relative clause is deferred from its antecedent:

(39) **adaptive immune mechanisms** develop in the host ^{ST-54}which will eliminate the transplanted the non-self organ non-self tissue

Subject complement head (NP)

A nominal element postmodified by a finite relative clause can also function as subject complement in a higher clause. It is the second most frequent syntactic position occupied by the NP as it constitutes 27.8% of all syntactic functions occurring in the material under study. From the semantic point of view, it expresses either classifying predication (40) or identification (41) in our data:

(40) here it's basically an arena a setting ^{AL-04}which includes some of the elements of history painting a mythological or sometimes a biblical subject classical architecture an episode from ancient history

(41) the earliest of these although he's often forgotten is Antonio Labriola ^{MM-71}who was perhaps the first person to begin to break with er the more er positivistic interpretation of Marxism

Object head (NP)

Another position a nominal element can occupy in the matrix clause is that of an object; including direct (42), indirect (43) and prepositional (44) objects. The noun phrases in this position are most frequent in our data, constituting 35.1%.

(42) you can eliminate the leukocytes fairly straightforwardly by a a kind of er gradient centrifugation so that you can prepare blood ^{ST-22}which is essentially completely free of leukocytes

(43) in the way enriched imagination presents the view to the eyes of man of genius ^{AL-22}who has seen much composed carefully and analysed and reflected upon the choice that one must make so

(44) you only have to think of the changes ^{MD-65}that have occurred in food consumption in this country or any of the developing ones to see what happens in the in the developed ones

Not only can the position of the subject NPs but also of the object noun phrases be affected by the principle of end-weight and the principle of end-focus. In these cases, the object heads are extraposed since they represent the rheme and their postmodifiers are more complex than the adverbial (45) or the prepositional object (46):

(45) particular types would therefore tend to be er multiplied and so by this picking of the best then you'd start to get qu-, fairly quickly at least over a reasonable times types ^{MD-11}that were different from the wild er ones growing around them

(46) i was talking to a surgical friend of mine and she was describing to me the sort of facial reconstructions ^{ST-11}that happen in severe burn patients er i-, or severe or in situations where there's been a severe d-, dec-, severe accident

Adverbial head (PP)

Postmodified nouns as adverbials are less frequent (11.9%) in comparison with other syntactic roles. They usually occur towards the end of the utterance (28, 29); in other instances they are introduced by the preposition *by* which expresses the agent in passive constructions (47):

(47) the version of Marxism which is most often criticized by people ^{MM-23}who don't know much about Marx himself is often this particular version of Marxism this er version of Marxism which possibly Marx had in mind when he said he wasn't himself a Marxist

Sentential antecedent

Relative clauses may postmodify also the antecedent realized by the whole main clause. In this type of relative clause, it is only the relative pronoun *which* that can introduce this subordinate clause. In academic lectures, sentential relatives are rare as they constitute only 4%:

(48) he argued that the middle class doesn't disappear in fact the middle class is the s-, is the class which is expanding most rapidly in Britain in the late n-, nineteenth and early twentieth century so far from polarizing and disappearing into a a class struggle between the impoverished and the super rich ^{MM-31}which is the crude interpretation of Marx

4.1.3.2 The verb phrase in the relative clause

This part of the study focuses on the type of the verb phrase functioning as a predicate in the relative clause with the S gap. To be more specific, it deals with tense relations between the main and the relative clause, the complexity of the verb phrase and it also provides a list of the verbs employed in the relative clauses in order to compare their type and frequency with those used in participial postmodifiers, as all these features may contribute to the choice of a finite postmodifier.

The finite relative clauses functioning as a postmodifier of a noun differ from their participial counterparts in three major aspects. First, finite clauses include a finite verb which is capable of expressing not only tense, mood and voice, but also person and number concord (cf. 2.2.2). Second, finite relative clauses contain either simple or complex verb phrases; whereas nonfinite participial postmodifying clauses in most cases involve only simple verb phrases⁴³. Simple verb phrases are those which consist of only one word (the simple present and past, the imperative or the subjunctive); complex verb phrases, on the other hand, consist of two or more words (Quirk et al. 1985: 151). And third, as a finite verb phrase can include

⁴³ The only exception is *be* as the marker of progressivity (cf. see below).

auxiliary and modal verbs, there is no constraint on modal and aspectual meaning to be expressed (cf. 2.3.2). This does not apply to the postmodifying participles: “Since modal auxiliaries have no nonfinite forms, they cannot occur in nonfinite verb phrases, and therefore the modal construction ... is not available within such phrases.” (ibid. 153) As regards the aspectual meaning, “there are sharp constraints upon aspect expression in the participle clauses used in postmodification” (ibid. 1263). The postmodifying participle should not be considered as abbreviated progressive forms in relative clauses since, as noted in (2.2.2.2), stative verbs, for example, which do not have the progressive in the finite verb phrase, are commonly used in a participial form. Thus, the postmodifying present participle neutralizes the aspectual contrast. A different situation arises in the case of postmodifying past participles where the progressive aspect can be expressed by means of the auxiliary *be*⁴⁴. In contrast, participial clauses are not capable of indicating perfective aspect in the vast majority of cases⁴⁵.

Based on the facts presented above, a hypothesis may be formulated. It is assumed that the finite relative clause will be employed whenever tense, aspect or modality are important to be explicitly expressed, and that the correspondence between finite relative clauses and their participial counterparts will be confined to simple verb phrases. However, our data presented in Table 16 indicate that the majority of verb phrases (62.9%) do not contain any expressions of these markers (both in terms of differing tenses in the matrix and the subordinate clause, and in terms of the presence of auxiliary verbs⁴⁶).

Table 16: The distribution of simple vs. complex verb phrases in academic lectures

	SOC		NAT		TOTAL	
	abs	%	abs	%	abs	%
simple VP	44	67.7	51	59.3	95	62.9
complex VP	21	32.3	35	40.7	56	37.1
TOTAL	65	100%	86	100%	151	100%

Noticeable differences can be also observed in the distribution of the two types of VPs in the two subregisters. While simple VPs account for nearly 70% in social sciences, in natural sciences they occur less frequently, i.e. they make up almost 60%.

⁴⁴ For example, *The food being eaten was meant for tomorrow* (cf. 2.2.2.2).

⁴⁵ An exception might be a structure with an indefinite noun phrase as head: *Any person or persons having witnessed the attack is under suspicion* (Quirk et al. 1985: 1264).

⁴⁶ Cf. below.

Simple verb phrases

Simple verb phrases represent two tense forms, i.e. the present simple and the past simple. According to the results in Table 17, the majority of relative clauses with the subject gap contain a simple verb phrase, which means that the VPs in these relative clauses do not explicitly express modality, voice or aspect. Hence, it is desired to look for principles, other than have been discussed so far, which lead to the use of the finite verb phrase.

The two subregisters display a similar proportion of the simple VPs in relative clauses with the difference between SOC and NAT being approximately 10%. The two subregisters, however, differ in terms of the distribution of the present and past tense form (cf. Table 17). While the past tense form in the natural science lectures is very rare, in social science lectures it constitutes almost a half of the simple VPs used. The preponderance of present tense forms in NAT is in accordance with the statement of Biber et al. (1999: 456): “The distribution of present and past tense verbs differs considerably across registers: Conversation and academic prose are alike in showing a strong preference for present tense forms. [In contrast,] fiction shows the opposite pattern, with a strong preference for past tense verbs.” The higher number of past tense forms in SOC can be ascribed to the fact that even though academic lectures present facts and general description (for which the present tense form is usually employed), the subject matter discussed in the social science lectures is connected with past events; thus, the past tense form is relatively frequent.

Table 17: Present and past simple forms across subregisters

	SOC		NAT		TOTAL	
	abs	%	abs	%	abs	%
present	25	56.8	47	92.2	72	75.8
past	19	43.2	4	7.8	23	24.2
TOTAL	44	100%	51	100%	95	100%

Based on the fact that the postmodifying participial clauses are incapable of indicating temporal relations other than simultaneity, we may assume that a full form of a verb is employed in a relative clause whenever other than simultaneous relations need to be expressed between a main clause and a relative clause. A problem, however, arises in connection with a nonfinite form of the verb *be*. The use of this form as a postmodifier is limited only to cases without ‘stative’ attributes⁴⁷. Conversely, in situations with ‘stative’

⁴⁷ ‘Stative’ attributes are “those which do not allow a progressive form of *be* in finite sentences” (Huddleston 1971: 250).

attributes the verb *be* can be deleted under certain circumstances, and then the relative clause will contain neither subject nor verb⁴⁸ (Huddleston 1971: 250). All the occurrences of relative clauses with the verb *be* as their predicate contain ‘stative’ attributes; thus, on the basis of the nonverbal nature of the less explicit form of these predicates, all the instances with relative clauses containing the copular verb *be* were separated, including examples (49) and (50).

(49) in other words you'd start to get domesticated forms ^{MD-13}which were different from the general population of of the wild plants around

(50) if you go back before Marx you had philosophers i mentioned Hegel Kant and others ^{MM-05}who were not social analysts

Table 18: The proportion of the verb ‘be’ as a head of the simple VP in relative clauses

	SOC		NAT		TOTAL	
	abs	%	abs	%	abs	%
BE	9	20.5	22	43.1	31	32.6
full verb	35	79.5	29	56.9	64	67.4
TOTAL	44	100%	51	100%	95	100%

After excluding all relative clauses with the predicates realized by the linking verb *be*, there remain 64 relative clauses where the relative pronoun functions as subject. An overview of combinations of respective tenses in the material under study is provided in Table 19.

Table 19: The distribution of tense forms in the main clauses and the relative clauses

			MAIN CLAUSE								TOTAL	
			pres		past		pres perfect		future			
			abs	%	abs	%	abs	%	abs	%	abs	%
R	SOC	pres	18	40.9	-	-	2	33.3	1	33.3	21	32.8
		past	4	9.1	10	90.9	-	-	-	-	14	21.9
	NAT	pres	21	47.7	1	9.1	4	66.7	2	66.7	28	43.8
		past	1	2.3	-	-	-	-	-	-	1	1.5
TOTAL		44	100	11	100	6	100	3	100	64	100	

The table above reveals that the majority of finite relative clauses in the simple present (altogether 39 instances, i.e. 62%) postmodify the noun which is an element of the matrix clause with the present tense verb. On the contrary, the relative clause in the simple past included in the past tense main clause forms (10 instances, i.e. 16%), which is displayed only

⁴⁸ For example, the meaning of *all those being uncooperative were sent out* is undoubtedly progressive: *All those who are being uncooperative were sent out*. In contrast, the sentence *those being illiterate were not allowed to vote* is unacceptable due to the ‘stative’ attribute (Huddleston 1971: 250). For the particular conditions under which the verb *be* can be deleted, see Huddleston 1971, pp. 250-52.

by the social science lectures. This is again due to the fact that the subject matter discussed in the social science lectures concerns past events, whereas natural science lectures present facts and general description.

The examples illustrating relative clauses in the simple tenses embedded in the matrix clause tenses are provided below:

(51) that money is allocated by professionals ^{MM-48}who don't own the money... [MC: present; RC: present]

(52) the person ^{MM-43}who engendered a number of these ideas is Rudolf Hilferding an Austrian economist and socialist ^{er} who himself ended up more of a Bernsteinian than a revolutionary [MC: present; RC: past]

(53) ... because the artist ^{AL-11}who produced it wasn't scholarly enough himself [MC: past; RC: past]

(54) you've had all these things ^{MD-80}which determine er then how you appear... [MC: present perfect; RC: present]

In conclusion, Tables 20 and 21 are provided to summarize all the features discussed so far, i.e. the syntactic function of the relative pronoun and the type of the verb phrase in the relative clause.

Table 20: The verb phrase in the relative clauses across subregisters

				SOC	NAT	TOTAL
TOTAL				99	136	235
nonsubject gap				34	50	84
S gap	complex VP			21	35	56
	simple VP	<i>be</i>		9	22	31
		full verb	different tenses	7	8	15
			same tenses	28	21	49

Table 21: The proportion of the same tenses in the two subregisters

same tenses	SOC	NAT
% of all finite clauses	28.3%	15.4%
% of S gap clauses	43.1%	24.4%
% of simple VPs	63.6%	41.2%

The findings presented in the two tables above reflect the character of the social science and natural science lectures. Not only does SOC display a higher proportion of the simple verb phrases in the relative clauses of the two subregisters, but it also contains a higher proportion of the combination of the same tenses in the matrix and the relative clause. These features, i.e. the infrequent use of both the verb *be* as a predicate and the complex VP predicate in relative

clauses, may be seen as partly accounting for the higher frequency of the reduced forms (5.5 per 1,000 words), in comparison to NAT where the participial postmodifiers are rare (1.6 per 1,000 words)⁴⁹.

The following part of the present section provides a list of the verbs in a simple tense form occurring in the subject gap relative clauses, in order to compare them and their frequency with those used in participial postmodifiers. The verbs for the present and past tense are listed in the following figures, and it seems that most of them belong to the group of stative verbs.

In social sciences, lexical repetitiveness is observed only in the past tense forms since the particular verbs appear in the present tense forms not more than twice. On the contrary, in the past tense 25% of all tokens occur in three occurrences in the sample.

Figure 5: The frequency of verbs (simple VP) in the social science lectures

	frequency	list of verbs
present tense	2x	<i>begin, follow, marks</i>
	1x	<i>arises, become, changes, declare, includes, is, know, means, organize, own, paints, seem, stretches, underpin</i>
past tense	3x	<i>became</i>
	1x	<i>arose, began, ended up, engendered, owned, painted, preceded, produced, proved</i>

The opposite pattern can be observed in natural sciences. As the present tense predominates in natural sciences, there is no lexical repetitiveness in the past tense. However, the items that reappear three or more times in the present tense correspond to 27%.

Figure 6: The frequency of verbs (simple VP) in the natural science lectures

	frequency	list of verbs
present tense	5x	<i>have</i>
	3x	<i>receives</i>
	2x	<i>generates, grow, shares, vary</i>
	1x	<i>are, cause, costs, defines, determine, happen, means, occurs, performs, provides, recognize, suit, sympathize</i>
past tense	1x	<i>ate</i>

⁴⁹ In SOC finite relative clauses with the S gap are 1.9 times more frequent than their reduced counterparts in contrast to NAT where the full clauses occur 6.1 times more frequently than the non-finite structures.

Complex verb phrases

As noted above, a verb phrase can be either simple or complex. Simple verb phrases have already been described; therefore, the focus of this section is on complex verb phrases found in the relative clauses with the S gap.

Four basic types of constructions are recognized in a complex verb phrase, namely modal, perfective, progressive and passive (Quirk et al. 1985: 151). “These four basic constructions also enter into combination with each other” (ibid.), but the order in which auxiliaries can occur is restricted (Huddleston & Pullum 2002: 105). Thus, each construction is dealt with in the order in which they can occur.

1) MODAL

Modal constructions are those which contain a modal auxiliary and the base of a verb (Quirk et al. 1985: 151). In our data they are very scarce as they appear only in 6 occurrences (i.e. 4% of the relative verb phrases). The modal verbs found in the sample subsume *can*, *could*, *may* and *will*. While *could* and *will* occur twice in our data, *may* and *can* are found only in one occurrence. Moreover, the auxiliary *could* is the only one which combines with other markers, i.e. the passive voice (55, 56):

(55) so that from Bernstein's point of view er capitalism itself was beginning to evolve er a kind o-, would hopefully evolve into a kind of socialism ^{MM-34}which could be developed through pursuit of reformism through pursuing democracy through pursuing er the er current paths of capitalist development without revolution

(56) ...because the conclusion which Lenin drew from Hilferding's ideas of organ-, organized capitalism was that here was capitalism itself developing institutions ^{MM-}⁵⁶which could be taken over by a future revolutionary state

(57) all these sort of products are come from plants and are **ones** ^{MD-07}which can be subject of course to plant breeding to crop improvement et cetera

“Modality is centrally concerned with the speaker’s attitude towards the factuality or actualization of the situation expressed by the rest of the clause” (Huddleston & Pullum 2002: 173). Both *can* (57) and *may* (18) encountered in the material are used as means of expressing possibility, with the difference that *can* denotes a higher degree of possibility. The remaining auxiliary *will* denotes future tense (5, 39). For the reason that modal auxiliaries do not have nonfinite counterparts, the finite verb phrases containing them cannot be substituted by a participial form, and thus the omission of modal verbs in (57, 18) would change the modality of the proposition (or the future tense would be lost in the case of the omission of *will* in (5, 39).

Even though modal auxiliaries do not have nonfinite counterparts, and consequently, these nonfinite counterparts cannot convey the modal meaning, epistemic modality can be expressed by other linguistic means, such as lexical modals (*probably, definitely, apparently*) (Biber et al. 1999: 557). However, no instances of such modals were encountered in the studied material.

2) PERFECTIVE⁵⁰

Perfective constructions contain the auxiliary *have* and the *-ed* participle of a verb (ibid.). In our data, 14 verb phrases in relative clauses with the S gap (9%)⁵¹ are introduced by the auxiliary *have*, all forming the present perfect. No instance of the past perfect was encountered in the academic lecture data. As for the individual subregisters, the present perfect occurs more frequently in the natural sciences as the proportion of NAT vs. SOC is approximately 4:1.

As has been mentioned, the complex verb phrase may include a combination of different types of constructions (cf. above). The combinations of the present perfect and other markers are as follows:

*Table 22: The distribution of present perfect forms in relative clauses with the S gap*⁵²

		social science		natural science		TOTAL	
		abs	%	abs	%	abs	%
<i>present perfect</i>							
active	simple	3	100	6	54.5	9	64.3
	progressive	-	-	1	9.1	1	7.1
passive	simple	-	-	4	36.4	4	28.6
TOTAL		3	100%	11	100%	14	100%

According to Huddleston & Pullum (2002: 139), the perfect tense is one of the means for expressing the temporal relation of anteriority: “The perfect, marked analytically, and the preterite, marked inflectionally, constitute the two past tenses: they have it in common that in their basic meanings they both express the temporal relation of anteriority.” (ibid.) All the combinations in our data are clauses containing the present perfect being subordinated to the present tense in the matrix; thus expressing the temporal relation of anteriority (58). The

⁵⁰ “Traditionally, the term PERFECT has been frequently used instead of PERFECTIVE:” (Quirk et al. 1985: 151)

⁵¹ The findings tally with the results of Biber et al (1999: 461) who state: “... perfect aspect verb phrases ... do occur relatively frequently in all registers (between 5% and 10%)”.

⁵² For the sake of brevity, passive progressive forms are not included in the table as no occurrence was found in the material.

substitution of the present perfect by the *-ing* form is not really an option since the anteriority would be lost and the meaning denoted by the *-ing* form would not be completed (58').

(58) the next consideration ^{MD-42}that has become much more recognized is the need for stability of yield

(58') >* the next consideration becoming much more recognized is the need for stability of yield

However, when the perfective forms are followed by a passive infinitive, the reduced counterpart is available, resulting in the past participle:

(59) although it seems obvious it's not something ^{MD-44}that's been too highly er stressed before

(59') > although it seems obvious it's not something too highly er stressed before

3) PROGRESSIVE

The third type of an auxiliary appearing in a complex verb phrase is the analytical progressive marker *BE*. The auxiliary *be*, either in a present or past form, together with the *-ing* participle of a verb form a progressive construction (Quirk et al. 1985: 151). The progressive forms are less frequent in comparison to the perfective constructions as there are altogether 13 occurrences accounting for 8.6% of all relative clauses with the S gap.

Table 23: The progressive forms occurring in relative clauses with the S gap⁵³

	social science		natural science		TOTAL	
	abs	%	abs	%	abs	%
progressive						
present	2	28.6	4	66.7	6	46.2
past	4	57.1	2	33.3	6	46.2
present perfect	1	14.3	-	-	1	7.6
TOTAL	7	100%	6	100%	13	100%

Clauses containing the progressive forms are prone to the reduction by *-ing* clauses. This may be related to the fact that full progressive forms in relative clauses are infrequent. However, there are several constraints which bar the substitution by the participial counterpart. First, the full form has to be used in instances where the progressive form has future time reference since the reduced counterparts tend to express an action simultaneous with the tense of the matrix clause. No such examples were, however, found in the sample. Second, in cases such as in example (60) where it would not be clear which element, whether the subject or the object of the superordinate clause, the subordinate clause identifies, the full form is preferred:

⁵³ For the sake of brevity, combinations with the past perfect and modals are not listed in the table as no occurrences were encountered in the material.

(60) as i said one of the primary aims is to produce varieties which are better adapted but the second part of that is to the particular environmental conditions under which they're expected to grow to produce varieties ^{MD-58}that are growing under these conditions

(60') as i said one of the primary aims is to produce varieties which are better adapted but the second part of that is to the particular environmental conditions under which they're expected to grow to produce varieties growing under these conditions

And third, when situations in progress, durative, ongoing or dynamic need to be presented as the nonfinite forms do not express such a range of temporal and aspectual meanings.

4) PASSIVE

Like a progressive construction, also a passive construction contains the auxiliary *BE* with the difference that the verb *be* is followed by the *-ed* participle (ibid.). The passive voice is quite frequent in comparison to other constructions as it appears in 30 instances across the two subregisters (i.e. 20% of all relative clauses with the S gap).

Table 24: The distribution of passive forms in the relative clauses across subregisters⁵⁴

	social science		natural science		TOTAL	
	abs	%	abs	%	abs	%
<i>passive</i>						
present	6	54.5	13	68.4	19	63.3
past	3	27.3	2	10.5	5	16.7
present perfect	-	-	4	6.7	4	13.3
modal	2	18.2	-	-	2	6.7
TOTAL	11	100%	19	100%	30	100%

As the table above shows, the passive voice in social science (17%) is nearly as frequent as in natural science (22%)⁵⁵. Although the figures reveal that the relative clauses display different preferences in terms of the frequency of auxiliary verbs and the verb phrase complexity in the two subregisters, it should be pointed out that the number of these occurrences is very low and thus insignificant.

Passive constructions are considered to be directly comparable with their nonfinite counterparts; however, there are a number of constraints which bar the use of nonfinite forms: - where tense needs to be expressed; otherwise, the use of the nonfinite form would suggest the same tense as in the main clause:

⁵⁴ For the sake of brevity, combination with the past perfect is not listed in the table as no occurrence was encountered in the material.

⁵⁵ I.e. 11 out of all 65 relative clauses with the S gap in SOC, and 19 out of all 86 relative clauses with the S gap in NAT.

(61) i think they are both good examples of the kind of work ^{AL-42}that was demanded classical subjects very highly finished...

(61') >*i think they are both good examples of the kind of work demanded classical subjects very highly finished...

- where modality (56) has to be expressed:

(56') >*...because the conclusion which Lenin drew from Hilferding's ideas of organ-, organized capitalism was that here was capitalism itself developing institutions taken over by a future revolutionary state

The following is the list of verbs in progressive and passive encountered in the material under study. This list will serve to compare these verbs with verbs found in a participial form based on the assumption that the relative clauses containing progressive or passive forms appear in a direct relationship with the *-ing* and *-ed* participle respectively.

According to Biber et al. (1999: 471), “common verbs in the progressive aspect come from several different semantic domains. These include dynamic verbs marking physical or communication activities, and stative verbs describing physical situations and mental, attitudinal, and perceptual states”. On the other hand, the choice between active and passive forms is strongly influenced by lexical factors:

“In academic writing, many of the verbs that most commonly occur in the passive refer to aspects of scientific methodology and analysis ... Other passive verbs are used to report findings or to express logical relations ... Otherwise, the passive verbs that are commonly used in conversation tend to be stative in meaning and often come close to adjectival functions; some of those could be alternatively analyzed as the copula *be* followed by a predicative adjective ...” (ibid. 1999: 477-80)

Thus, lexical items found in our data which represent verbs strongly associated with the passive form (according to Biber et al. 1999: 478-79) are in bold in the subsequent figures. Despite the relatively small investigated material, the number of verbs occurring in the passive voice is significant, i.e. 30% of the verbs encountered in the material are strongly associated with the passive voice.

Figure 7: The frequency of verbs (complex VP) in the social science lectures

	frequency	list of verbs
progressive	2x	<i>working</i>
	1x	<i>developing, expanding, following, going on</i>
passive	1x	<i>built, called, controlled, criticized, demanded, developed, employed, judged, spelled, taken, undermined</i>

Figure 8: The frequency of verbs (complex VP) in the natural science lectures

	frequency	list of verbs
progressive	4x	<i>growing</i>
	1x	<i>going, increasing, proliferating</i>
passive	2x	<i>adapted, done, suited</i>
	1x	<i>cultivated, derived, described, focused, grown, inherited, required, shared, stressed, taken, transplanted, treated, used</i>

4.2 Participial clauses

The present section presents an analysis of participial clauses from the viewpoint of syntactic, quantitative and lexical features. Section (4.2.1) provides quantitative findings, whereas sections (4.2.2) and (4.2.3) describe the present and the past participle, respectively, based on the features discussed for the relative clauses.

Similarly to finite relative clauses, also participial forms postmodifying the subject nouns serve a clear discourse function, i.e. they provide anaphoric links to the preceding clause elements. In other words, participial postmodifiers link the new sentence and the new nominal entity with the previous context:

(62) **the Prix de Rome** was the most **important competition** in academic art education every two years a subject was set from either the classics or the Bible and every student ^{AL-30} entering it had to paint a picture of that theme

(63) the phenotype is made up of the genotype what genes you've got and how they're being expressed in other words what's inherited from your parents is being but it's also a product of your environment okay what conditions you grow in what **food you've had** all these things which determine er then how you appear... different people ^{MD-81} given exactly the same food react differently

4.2.1 Frequency of occurrence of participial structures

The quantitative overview of the participial clauses encountered in our material is presented in Table 25. According to its results, nonfinite forms are more frequent in social science than in natural science. The proportion of the present and the past participle in each subregister is almost equivalent.

Table 25: Mean frequency of participial clauses across subregisters

	social science		natural science		TOTAL	
	abs	per 1,000	abs	per 1,000	abs	per 1,000
present participle	19	3.0	8	0.9	27	1.8
past participle	16	2.5	6	0.7	22	1.4
TOTAL	35	5.5	14	1.6	49	3.2

4.2.2 The present participle

This section focuses on postmodification of head nouns realized by the *-ing* clauses. It comments on the quantitative findings, some syntactic features as well as on the lexical distribution.

For the reason that one of the main interest of the present study is the relation between finite and nonfinite forms, the distribution of finite relative clauses in the active voice together with their reduced counterparts is presented in Table 26.

Table 26: Mean frequency of finite active clauses with the *S* gap and *-ing* clauses

	SOC			NAT			TOTAL		
	abs	%	per 1,000	abs	%	per 1,000	abs	%	per 1,000
finite active ⁵⁶	88	82.2%	13.8	117	93.6%	13.2	205	88.4%	13.4
<i>-ing</i>	19	17.8%	3.0	8	6.4%	0.9	27	11.6%	1.8
active total	107	100%	16.8	125	100%	14.1	232	100%	15.2

Altogether, 27 *-ing* clauses (i.e. 11.6% of active predicates) were identified in our data. The figures in the table above indicate that the majority (88.4%) of the postmodifiers in the active voice are realized by means of a finite clause. The frequency per words of the finite forms in the two subregisters is 1:1; consequently, the subtle difference in the frequency of active modifiers per 1,000 words is due to the fact that natural science displays a slightly lower amount of nonfinite forms. In SOC the finite predicates realize 82.2% of the active postmodifiers, while in NAT it is 93.6%.

In what follows, we concentrate on the syntactic function the modified noun performs in the higher clause. It is assumed that nonfinite forms postmodify nouns in the subject position more frequently than the relative clauses since relative clauses with subject heads tend to disrupt the matrix clause, i.e. a shorter form of a modifier is preferred for the subject noun phrases. However, another point has to be stressed in connection with the quantitative results. In our data, there are 4 instances with the main clause verb missing (see example (64)). This fact can be attributed to uncompleted utterances which are characteristic of spoken register: “where relative clauses are placed medially – in particular, where they qualify the subject of the main clause – speakers have a strong tendency to anacoluthon” (Quirk 1957: 104). Despite the fact that the main clause verb is missing in these instances, they were

⁵⁶ Finite relative clauses with the *S* gap minus the finite clauses in passive: 235 – 30 = 205.

included in the count, and the postmodified nouns were regarded as occupying the subject position due to their initial position.

(64) so works like this winners of the Prix de Rome er ^{AL-50}displaying their learning full of intellectual investment ^{AL-51}showing off classicizing tendency and also ^{AL-52}very consciously using seventeenth century French models the idea of a great national style and of course in the nineteenth century many people were looking back to...

Table 27: The syntactic function of the –ing modified NP in the matrix clause

	SOC		NAT		TOTAL	
	abs	%	abs	%	abs	%
adverbial	5	26.3	2	25.0	7	26.0
object	3	15.8	3	37.5	6	22.2
Cs	5	26.3	1	12.5	6	22.2
subject	6	31.6	2	25.0	8	29.6
TOTAL	19	100%	8	100%	27	100%

According to the results in Table 27, the most frequent grammatical function of a noun postmodified by a present participle in academic lectures is that of subject; thus, the above-mentioned assumption is confirmed here. However, it should be pointed out that the preponderance of the subject position is not so prominent in comparison with the frequency of other syntactic functions.

The following examples illustrate the use of the present participial clauses functioning as postmodifiers of noun phrases in the respective clause element functions:

- subject (exactly a half of nouns in the subject function are realized by *there* construction):

(65) some of you ^{ST-35}writing the essay on on gene therapy will have heard about SCID in the context of gene therapy...

(66) what happens is that if there is hyperacute rejection ^{ST-61}going on immediately or very very quickly before the cessation of the operation er it will be seen that the kidney starts to swell become oedematous okay starts to swell and goes much darker in colour

- subject complement:

(67) particular types would therefore tend to be er multiplied and so by this picking of the best then you'd start to get qu-, fairly quickly at least over a reasonable times types that were different from the wild er ones ^{MD-12}growing around them

- adverbial:

(68) if we the viewers are positioned as tourists ^{AL-40}coming across this view as if we sort of walk down this path and there it is spread out before us the glorious Colosseum

- object:

(69) he pointed to the fact that what materialist theory represented for him was the first attempt to create a sort of er general science general social science ^{MM-72}unifying different historical processes

The following part of the present section provides a lexical characterization of the present participial postmodifiers. The verbs found in our data are summarized in the following figures. As can be observed, neither of the two subregisters displays a pattern of repetitiveness as most of the verbs appear only once in our data.

Figure 9: The frequency of verbs (the present participle) in the social science lectures

	frequency	list of verbs
-ing	2x	<i>being, working, showing</i>
	1x	<i>bringing, coming across, creating, developing, displaying, driving, entering, following, running, sitting, sketching, unifying, using</i>

Figure 10: The frequency of verbs (the present participle) in the natural science lectures

	frequency	list of verbs
-ing	1x	<i>defining, destroying, going on, growing, ionizing, originating, protesting, writing</i>

4.2.3 The past participle

As the present participle was studied in the previous section, attention of this section is paid to the past participle functioning as a postmodifier of nouns. Like in section (4.2.2), the same aspects are also dealt with here, i.e. the quantitative results, some syntactic properties and lexical distribution.

In general, past participial clauses are considered to be in a direct relation to finite relative clauses in the passive voice. To be more specific, they represent reduced passive clauses. In order to compare their distribution across the subregisters, the frequency of the passive postmodifying clauses is provided in Table 28.

Table 28: Mean frequency of finite passive clauses with the S gap and -ed clauses

	SOC			NAT			TOTAL		
	abs	%	per 1,000	abs	%	per 1,000	abs	%	per 1,000
finite passive	11	40.7%	1.7	19	76.0%	2.1	30	57.7%	2.0
-ed	16	57.3%	2.5	6	24.0%	0.7	22	42.3%	1.4
passive total	27	100%	4.2	25	100%	2.8	52	100%	3.4

Altogether, 22 *-ed* clauses were identified in the investigated material. Overall, the passive finite relative clauses appear more frequently (57.7% of the passive predicates) than

their reduced counterparts in academic lectures but the difference is not so sharp. Each subregister, however, displays distinct tendencies. While the *-ed* clauses outnumber the finite forms in social science (57.3%), a different pattern is spotted in natural science (24%), i.e. the finite clauses predominate over the nonfinite forms.

Regarding the grammatical role the postmodified noun performs in the matrix clause, *-ed* clauses show a different pattern when compared to the *-ing* clauses, i.e. more than a half of all *-ed* clauses postmodify nouns occurring in the function of subject complement (cf. Table 29). Thus, the assumption that the nonfinite forms are more frequent in the subject noun phrases than finite clauses is not confirmed here. This might be ascribed to the tendency of spoken discourse to place the weighty information towards the end of a main clause, in order to avoid the above-mentioned anacoluthon and disrupting the main clause. As far as the *-ing* clauses are concerned, the most frequent position occupied by a noun which is postmodified by a present participle is that of subject. It needs to be, however, stressed that its predominance is not so prominent and the frequency of all syntactic functions is nearly balanced.

Table 29: The syntactic function of the *-ed* modified noun phrase in the matrix clause

	SOC		NAT		TOTAL	
	abs	%	abs	%	abs	%
Cs	10	62.5	3	50.0	13	59.1
object	4	25.0	1	16.7	5	22.7
subject	2	12.5	2	33.3	4	18.2
TOTAL	16	100%	6	100%	22	100%

The syntactic roles the postmodified noun performs in the main clause in our data are as follows:

- subject complement:

(70) bone marrow transplantation is used broadly in these two situations the one major condition where the bone marrow completely is non-functional is a condition ^{ST-33} called SCID severe combined immunodeficiency

- object:

(71) and this was and continues to be a very serious problem is that the success of the graft depends on the feasibility of the surgery ^{ST-48} required to transfer the solid organ from the donor to the recipient

- subject (three out of all four instances of the noun in the subject position are realized by *there* construction):

(72) blood transfusions er have been attempted were attempted in th-, in in the nineteenth century and th-, there were a number of problems ^{ST-18}immediately discovered

In what follows, we focus on the lexical characterization of the past participial postmodifiers encountered in our data. As was noted in section (4.1.3.2), there exists certain predictability as regards verbs occurring in the passive voice. The same assumption was applied to the past participles in order to compare the finite and nonfinite forms functioning as passive postmodifiers. The list of the *-ed* forms identified in the material is presented in the following figures. Based on the data provided, it can be noted that 59% of the verbs found in our data are strongly associated with the passive voice, which is twice as many as in the passive finite clauses (cf. 30%). The verbs in bold in the subsequent figures are those provided by Biber et al. (1999) as strongly associated with the passive.

Figure 11: The frequency of verbs (the past participle) in the social science lectures

	frequency	list of verbs
<i>-ed</i>	5x	<i>called</i>
	1x	<i>associated, based, composed, done, exemplified, finished, focused, infused, invested, put, set</i>

Figure 12: The frequency of verbs (the past participle) in the natural science lectures

	frequency	list of verbs
<i>-ed</i>	1x	<i>called, carried out, discovered, given, processed, required</i>

4.3 Multiple postmodification

As stated in section (2.1), a head noun can be postmodified not only by a single form but in many cases by various types of postmodifiers. Nevertheless, attention of the present study is paid to noun phrases containing relative clauses and participles. In the sample, there are overall four occurrences of NPs postmodified by combinations of finite relative clauses and participial forms, e.g (73, 74):

(73) it's due to the presence in the patient of antibodies circulating antibodies ^{ST-63}which are specific for the transplanted tissue ^{ST-64}which recognize antigens on a transplanted tissue especially by recognizing alloantigens on the endothelium of the transplanted tissue

(74) this is the sick patient who has a cancer say ^{ST-45}originating in the stomach ^{ST-46}which has spread about the body

Example (73) illustrates the head noun postmodified by two relative clauses, both introduced by the relative pronoun *which*. The premodified noun *circulating antibodies* is a complement

of the preposition *of*, together forming the PP which functions as a postmodifier of the noun *presence*. What is peculiar about this example is the position of the adverbial *in the patient*, i.e. between the head noun *presence* and its postmodifier. Such a discontinuity ensues from the fact that the noun *antibodies* is further postmodified and weighty. Thus, the ordering of clause elements is in accordance with the principle of end-weight. Example (74) displays the multiple postmodification realized by a present participle and a full relative clause. The reason why the relative clause follows the participle is that it overtly marks its postmodifier status by means of the relativizer. In other words, even though the relative clause does not immediately follow the head noun, it can be easily identified as a postmodifier by means of its relative pronoun. Moreover, examples (73) and (74) display embedded postmodification where one postmodifier modifies the immediately adjacent head noun (*antibodies* and *cancer* respectively) contained in the preceding postmodifier. Another interesting case of multiple postmodification is illustrated by example (10⁵⁷). Here the head noun *textbook* is postmodified by three successive postmodifiers: a relative clause with the object gap and zero relativizer, *-ed* clause and relative clause introduced by the relative pronoun *which*. Such an ordering, particularly the position of the relative clause with zero relativizer followed by the participle, might be attributed to an attempt to avoid the repetitiveness of the relative pronoun in the case the *-ed* clause would precede the relative clause since in this position the relativizer could not be omitted. The position of the last relative clause accrues from not only the fact that its postmodifier status is overtly marked by means of the relativizer, but also by its length and weightiness. Furthermore, the semantic content expressed by this relative clause seems to be additional to that conveyed by the preceding postmodifiers.

4.4 Comparison of the finite relative clauses and participial postmodifiers

As finite relative clauses and participial clauses were discussed separately in the previous sections, attention of this section is paid to comparison of the two postmodifying forms between spoken and written discourse in terms of frequency, proportions, qualitative features and lexical characterization. By this comparison we attempt to discover whether there are any differences in the use of the respective postmodifying forms between spoken and

⁵⁷ For the sake of clarity, example (10) is repeated:

(10) this is Ideal Landscape with Washerwomen from eighteen-o-seven but more important than Valenciennes' painting was a textbook ^{AL-15}he published in eighteen-hundred ^{AL-16}called Elements of Practical Perspective ^{AL-17}which proved to be a very influential work right the way through the nineteenth century

written academic expository discourse, particularly between the two subregisters – social science and natural science. Another aim of this section is to make clear the patterns that are thought to be significant for the account of the differences identified in the research material.

The frequencies of the postmodifying forms across spoken and written discourse

The postmodifiers in our material and in the data given by Šaldová (2005a) show a certain unbalance as regards the relationship between the realization forms and the subregister. The subregisters NAT and SOC also differ significantly in the frequencies of full vs. reduced postmodifiers.

Table 30: Mean frequency of relative clauses and participial clauses

per 1,000 words	SPOKEN			WRITTEN ⁵⁸		
	SOC	NAT	TOTAL	SOC	NAT	TOTAL
modifiers overall ⁵⁹	21.00	16.92	18.6	20.96	18.57	19.4
S gap modifiers ⁶⁰	15.7	11.3	13.1	14.1	15.4	15.0
relative clauses	10.2	9.7	9.9	8.0	5.4	6.3
participles	5.5	1.6	3.2	6.1	10.1	8.6

The overall tendency of modifiers confirms the general feature of spoken discourse in that academic lectures contain a lower number of postmodifiers when compared to written academic prose. However, the difference is not so prominent, which might be due to the fact that academic lectures have high informational load, and thus resemble written academic prose rather than to face-to-face conversation⁶¹ from this point of view.

What is surprising is the salient difference between spoken and written discourse as well as between SOC and NAT in terms of which realization forms are employed. Academic lectures employ finite forms significantly more often than reduced forms in comparison to academic prose where the distribution is exactly the opposite. This might be connected with the nature of academic lectures being closer to face-to-face conversation from this point of view since nonfinite postmodifiers are very scarce in conversation (Biber et al. 1999: 606). In other words, postmodification is generally more frequent in academic lectures than in face-to-face conversation⁶² due to their high informational load, but when it comes to the choice

⁵⁸ Cf. Šaldová (2005a: 54-55; 62).

⁵⁹ Modifiers overall include finite relative clauses with the S and non-S gap and participles.

⁶⁰ S gap modifiers subsume finite relative clauses with the S gap and participial forms.

⁶¹ Conversation is the opposite extreme from academic prose as it is characterized by the low frequency of postmodifiers (Biber et al. 1999: 607).

⁶² “Most postmodifiers are generally rare in conversation.” (Biber et al. 1999: 606)

between finite and nonfinite forms, finite relative clauses are preferred, as in conversation, and thus more frequent in academic lectures than in academic prose. This also confirms the theory of Hladký (1961) and Malá (2009) who stress that the specialized style is characterized by a frequent use of complex condensation, i.e. by a frequent use of participial postmodifiers, whereas in conversation complex condensation is infrequent.

The reverse situation occurs in the distribution of respective postmodifying forms between NAT and SOC in spoken and written discourse (cf. Table 31, 32). In academic lectures, NAT displays the lowest frequency of the simple verb phrases in the relative clauses and it also contains the lowest proportion of the combination of the same tenses in the matrix and the subordinate clause, i.e. the frequent use of both the verb *be* as a predicate and the complex VP predicate in relative clauses partly accounts for the lower frequency of reduced forms in comparison to SOC where the participial postmodifiers are employed more often. The distribution of the particular postmodifying forms is, however, in written discourse completely the opposite.

Table 31: The frequency of the types of predicates in the relative clause

in %	SPOKEN			WRITTEN ⁶³		
	SOC	NAT	TOTAL	SOC	NAT	TOTAL
simple VP	67.7	59.3	62.9	60.0	68.3	64.8
full VP	79.5	56.9	67.4	71.0	83.7	78.2
same tense	28.3	15.4	20.9	38.3	50.5	44.8

Table 32: Mean frequency of nonfinite forms

per 1,000 words	SPOKEN			WRITTEN ⁶⁴		
	SOC	NAT	TOTAL	SOC	NAT	TOTAL
-ing clauses	3.0	0.9	1.8	2.1	4.2	3.4
-ed clauses	2.5	0.7	1.4	4.1	5.9	5.3

Another difference can be observed (cf. Table 33) in the syntactic function the postmodified noun performs in the main clause. While written discourse shows a considerable preference for the reduced forms in the subject noun phrase, spoken discourse employs nonfinite postmodifiers for qualifying subject NPs less frequently. Even though spoken discourse also shows a certain preference for subject nouns being postmodified by participles, this tendency is not as marked as in written discourse. To be more specific, *-ed* clauses in

⁶³ Cf. Šaldová (2005a: 82, 99).

⁶⁴ Cf. Šaldová (2005a: 147).

social science postmodify nonsubject NPs more preferably. It might be connected with the fact that the principle of end-weight is preferred in spoken discourse; consequently, more weighty information is placed finally in a main clause. As for the full relative clauses, in both spoken and written discourse they postmodify nonsubject NPs in most of the cases since they do not disrupt the matrix clause in this position.

Table 33: The subject NP in the matrix clause postmodified by the respective forms

in %	SPOKEN			WRITTEN ⁶⁵		
	SOC	NAT	TOTAL	SOC	NAT	TOTAL
-ing	31.6	25.0	29.6	27.5	31.2	30.4
-ed	12.5	33.3	18.2	35.7	42.7	40.7
RC	23.1	19.8	21.2	20.7	27.9	24.6

The last property which varies across the subregisters of spoken and written discourse is the distribution of relative pronouns⁶⁶ (cf. Table 34). What is striking is the low frequency of zero relativizers and the high number of relative pronoun *which* in academic lectures. Even though zero relativizer appears more often in academic lectures than in academic prose, the difference is not as salient as it would be between academic prose and face-to-face conversation⁶⁷. Concerning the relativizer *which*, it is less frequent when compared to academic prose but in comparison to conversation where “*which* is relatively rare” (Biber et al. 1999: 611), its frequency is higher. These features are one of those that confirm the assumption that academic lectures occur on a continuum between face-to-face conversation and academic prose occupying the particular ends of this continuum (Csomay 2002: 204).

Table 34: The distribution of relative pronouns in spoken and written discourse

in %	SPOKEN		WRITTEN ⁶⁸	
	SOC	NAT	SOC	NAT
who	24.2	8.1	9.8	1.6
zero	8.1	8.1	3.6	1.2
that	19.2	42.0	9.6	15.2
which	42.5	38.1	70.2	64.6

⁶⁵ Cf. Šaldová (2005a: 148).

⁶⁶ Relative clauses with the nonsubject gap are included.

⁶⁷ “About 25% of all relative clauses in conversation omit the relativizer.” (Biber et al. 1999: 620)

⁶⁸ Cf. Šaldová (2005a: 149).

Lexical comparison of postmodifiers across spoken and written discourse

Another aspect which was focused on is the amount of lexical variations in the particular types of modification. It was assumed that the amount of lexical variation among nonfinite forms would be lower due to “the tendency of participles to reclassify as members of other word classes, or to be used as ‘function’ words for expressing relations between entities (cf. *concerned*, *including* or *associated with*), especially in academic prose” (Šaldová 2005a: 149). This assumption seems to have been correct only in written discourse as in spoken discourse the lexical variation among nonfinite verbs is higher when compared to the finite verb forms. This might be attributed either to the small size of the sample which was subjected to examination, or to academic lectures having some features of face-to-face conversation, i.e. they do not employ verbs referring to aspects of scientific methodology and analysis or verbs reporting findings or expressing logical relations in such a high quantity as written academic prose; thus, a wider variation of lexis is used.

The most prominent difference in the amount of lexical variation between the two constructions is found in natural sciences in both spoken and written discourse.

Table 35: Lexical variation of verbs in spoken and written discourse

lex.type/token	SPOKEN		WRITTEN ⁶⁹	
	SOC	NAT	SOC	NAT
participles	69%	100%	60%	44%
RC	61%	56%	72%	59%

What is noticeable in the figure below (Figure 13), presenting the most frequent verbs in the particular forms and discourse, is the exclusive occurrence of the verb *have* among the full forms in both spoken and written discourse⁷⁰. This is due to the fact that the participial form of the verb *have* does not usually appear in a postmodifying function (Quirk et al. 1985: 1264). Furthermore, linking verbs (*become*, *seem*, *appear*)⁷¹ seem to occur also only in the finite forms as their reduced forms are encountered neither in spoken discourse nor in written texts.

⁶⁹ Cf. Šaldová (2005a: 150).

⁷⁰ On account of the small number of participial postmodifiers in spoken discourse, we have decided not to discern between the two subregisters of spoken and written discourse.

⁷¹ The verb *become* is the only linking verb occurring in both spoken and written discourse. The verbs *seem* and *appear* are found exclusively in written academic texts.

Figure 13: The distribution of verbs functioning as postmodifiers in the active voice

	finite verb	-ing
SPOKEN	6x grow 5x have 4x become, follow 3x begin 2x arise, develop, generate, marks, own, paint, receive, share, spread, vary, work	2x working, showing 1x being, bringing, coming across, creating, developing, defining, destroying, displaying, driving, entering, going on, following, growing, ionizing, originating, protesting, running, sitting, sketching, unifying, using, writing
WRITTEN ⁷²	20x have 15x give 6x became, speak 5x live, occur, produce 4x appear, arise, eat, make, represent, rise, show 3x accumulate, cover, emerged, form, fruit, leads, seem, take	11x representing 9x arising, being, involving 7x containing, forming, lying, comprising, extending, including, ranging 5x concerning, making, suggesting, using 4x carrying, corresponding, indicating, underlying 3x existing, leading, seeking

As for the passive postmodifiers tabulated in Figure 14, there are no prominent differences between the meanings of verbs identified in the investigated material. The only difference observed is that written academic prose employs forms that are strongly associated with the passive more frequently than academic lectures, as well as a higher repetitiveness of these forms⁷³; however, this fact can be attributed to the higher number of examined sentences in written discourse.

Figure 14: The distribution of verbs functioning as postmodifiers in the passive voice

	finite verb	-ed
SPOKEN	2x adapted, done , suited, taken 1x built, called , controlled, criticized, cultivated, demanded, derived, described , developed, employed, focused, judged, inherited, required, shared, spelled, stressed, transplanted, treated , undermined, used	6x called 1x associated, based , carried out, discovered, composed, done , exemplified, finished, focused, given , infused, invested, made, processed, put , required , set

⁷² Cf. Šaldová (2005a: 150).

⁷³ Those forms strongly associated with the passive are in bold.

Figure 14 continues:

	finite verb	-ed
WRITTEN ⁷⁴	<p>8x <i>used</i> 5x <i>located</i> 4x <i>related, called</i> 3x <i>seen, concerned, dispersed</i> 2x <i>adopted, associated, conceived,</i> <i>consumed, defined, developed,</i> <i>engaged, established, examined,</i> <i>expected, expressed, fitted, formed,</i> <i>given, held, influenced, kept, made,</i> <i>mixed, piled, proposed, translated,</i> <i>written</i></p>	<p>37x <i>associated</i> 19x <i>formed</i> 13x <i>produced</i> 11x <i>used</i> 10x <i>located</i> 9x <i>observed</i> 8x <i>defined</i> 7x <i>based, discussed, examined, found</i> 5x <i>called, described</i> 4x <i>expressed</i> <i>set</i></p>

⁷⁴ Šaldová (2005: 151).

5. CONCLUSION

The aim of the present study was to compare two postmodifying constructions in noun phrases – the finite relative adnominal clauses with the subject gap and the nonfinite participial clauses, which are generally considered to be equivalent.

The finite relative clauses and the participial postmodifiers were analyzed in spoken academic discourse, particularly in two subregisters – social and natural science. Subsequently, the results were contrasted with those obtained by Šaldová (2005a) based on which spoken and written discourse were compared, in order to ascertain if there are any differences (both quantitative and qualitative features) in the use of the two postmodifying forms between spoken and written discourse.

Academic lectures as a register are assumed to occur on a continuum between academic prose occupying one end of the continuum and face-to-face conversation placed at the other end of the continuum. This assumption is based on the fact that academic lectures have highly informative purpose (as in academic prose) but they also have some characteristics of face-to-face conversation as they are produced in the spoken mode. Hence, another aim of the present study was to investigate the linguistic characteristics of academic lectures as regards clausal postmodification, describing the extent to which this register shares linguistic features of conversation and academic prose.

One of the features determining the character of academic lectures was the proportion of the finite relative clauses with the subject gap versus relative clauses with the nonsubject gap. The fact that the finite clauses with the subject gap account for 64.3% places academic lectures right in the middle of the above-mentioned continuum as the proportion of the relative clauses with the subject gap corresponds approximately to 55% in conversation as opposed to academic prose where they make up 75% (Biber et al. 1999: 621). For the reason that the difference in the frequency of the relative clauses with the subject gap between conversation versus academic lectures (9.3) and between academic lectures versus academic prose (10.7) is almost equivalent, it is complicated to define the character of academic lectures from this point of view.

A different situation is, however, pictured by the distribution of relative pronouns within the relative clauses. Zero relativizer accounting for 8.1% posits academic lectures on the continuum closer towards the end occupied by academic prose (2.4%) rather than towards conversation (25%). The frequency of the relative pronoun *which* describes academic lectures as more ‘academic-prose-like’ as *which* makes up 40% of all relativizers in the finite relative

clauses. In comparison, the frequency of *which* in academic prose accounts for 67.4%, whilst in conversation “*which* is relatively rare” (Biber et al. 1999: 611).

As for the individual subregisters, the distribution of the relative pronouns does not differ significantly; the only difference can be observed in the more frequent occurrence of *that* in natural science and of *who* in social science in both spoken and written discourse. The latter is reflected by the different character of the subject matter (personal head noun) discussed in the two subregisters.

Another feature that discriminates academic lectures from academic prose and face-to-face conversation is the overall frequency of modifiers⁷⁵. The assumption that postmodifiers appear less frequently in spoken discourse was confirmed as their mean frequency was 13.1 per 1,000 words in academic lectures in comparison to academic prose (15.0 modifiers per 1,000 words). This characteristic describes academic lectures as more ‘academic-prose-like’ since the difference in the mean frequency was not so prominent. The proportion of realization forms of postmodifiers varied between spoken and written discourse as well as between social and natural science. Contrary to academic prose, finite forms are used significantly more often than the reduced forms in academic lectures. This might be attributed to the ‘conversation-like’ character of academic lectures, i.e. academic lectures employ postmodifying forms more frequently than face-to-face conversation due to their highly informational character but when the choice between finite and nonfinite forms should be made, finite clauses represent a preferable option, which may also accrue from the infrequent use of complex condensation in the spoken mode.

As far as the individual postmodifying forms in natural and social science are concerned, the two subregisters display a mutually opposite tendency in spoken and written discourse. The fact that the social science lectures show the highest frequency of the simple verb phrases in the relative clauses and that they contain the highest proportion of the combination of the same tenses in the higher and subordinate clause partly accounts for the highest frequency of nonfinite forms (5.5 per 1,000 words) in comparison to natural science lectures where the infrequent use of participial postmodifiers (1.6 per 1,000 words) might ensue from the frequent use of both the verb *be* as a predicate and the complex verb phrase predicate in finite relative clauses. The distribution of the particular postmodifying forms in written discourse is, however, completely the opposite: the mean frequency of nonfinite forms

⁷⁵ The analysis was carried out on the finite relative clauses with the subject gap and the participial postmodifiers.

in the social science writing is 6.1 per 1,000 words, whereas in natural science the mean frequency is 10.1 per 1,000 words.

Another feature differentiating academic lectures from academic prose is the syntactic function of the postmodified noun in the matrix clause. While the significant number of the reduced forms qualifies the subject NP in written discourse (36.6%), spoken discourse uses nonfinite forms for postmodifying subject noun phrases less frequently (24.5%). Even though spoken discourse also shows a certain preference for subject nouns being postmodified by participles, this tendency is not as marked as in written discourse. This might be related to the preference of spoken discourse for placing more weighty information towards the end of a main clause, which may be also the reason why participial postmodifiers are generally so infrequent in the natural science lectures. The fact that the full relative clauses predominantly qualify nonsubject noun phrases in academic prose explains why their nonfinite counterparts are preferred in subject noun phrases – due to their shorter form they do not disrupt the matrix clause as the full relative clauses tend to do.

The last aspect discussed was the lexical variation of the verb phrases functioning as postmodifiers. The assumption that the amount of lexical variation among the reduced forms would be lower due to their ability to acquire characteristics of members of other word classes, or to be employed as ‘function’ words when relations between entities need to be expressed seem to have been correct only in written discourse. The higher amount of lexical variation of nonfinite verbs in spoken discourse may accrue from either the small size of the investigated material or from the fact that academic lectures possess some features of face-to-face conversation in that the lexis is not confined to verbs referring to aspects of scientific methodology and analysis or verbs reporting findings or expressing logical relations to such extent as in academic prose. Consequently, a wider variation of lexis is used in academic lectures.

To conclude, we may confirm the hypothesis that as far as the postmodification of NPs is concerned, academic lectures as a register occur on the continuum between academic prose and face-to-face conversation. Based on the investigated material, it seems that academic lectures can be characterized as more ‘academic-prose-like’ as the overall tendency of postmodifiers as well as the frequency of both the relative pronoun *which* and zero relativizer tally with academic prose to greater extent. The only quantitative feature of academic lectures that is in accordance with face-to-face conversation is the preponderance of the finite relative clause over their nonfinite counterparts.

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SOURCES

The British Academic Spoken English (BASE) corpus – accessed from
http://www.reading.ac.uk/AcaDepts/ll/base_corpus/

RESUMÉ

Tato diplomová práce porovnává dva typy postmodifikačních konstrukcí v anglickém jazyce – finitní věty vztažné a věty participiální. Nejenže tyto dvě konstrukce realizují tentýž větný člen, tj. postmodifikátor v rámci substantivní fráze, ale jsou také obecně považovány za ekvivalentní. Cílem práce je tedy poskytnout podrobnější popis obou konstrukcí z hlediska jejich charakteru a užití v mluveném akademickém projevu.

Práce je rozdělena do tří hlavních částí, a to teoretického úvodu (kapitola 2), který definuje vlastnosti obou typů postmodifikátorů a jejich vzájemný vztah, jak je popsáno v literatuře; hlavní části (kapitoly 3-4), která prezentuje vlastní výzkum; a části závěrečné v kapitole 5.

Oddíl 2.1 definuje pojem substantivní fráze a popisuje její strukturu. Základním prvkem substantivní fráze je řídicí člen (tzv. antecedent) realizovaný obecným podstatným jménem, vlastním jménem nebo zájmenem. Dalším stavebním prvkem je determinátor (člen, číslovka, kvantifikátor), premodifikátor (přídavné jméno, podstatné jméno, přítomné a minulé příděstí) a postmodifikátor, který se může nacházet jak ve formě fráze, tak věty. Zatímco determinátor je povinnou součástí všech substantivních frází, jejichž řídicí člen je realizován obecným podstatným jménem, premodifikátor a postmodifikátor je člen fakultativní. Protože se v této souvislosti přístup některých gramatik liší, a to zejména z hlediska rozdělení a klasifikace jednotlivých stavebních prvků nacházející se za řídicím substantivem ve jmenné frázi, tento oddíl se snaží popsat hlavní rozdíly těchto přístupů - přístupů, které jsou považovány za stěžejní pro tuto diplomovou práci: *A Comprehensive Grammar of the English Language (CGEL)* od R. Quirka a spol. (1985), *The Cambridge Grammar of the English Language (CamGr)* od R. Huddlestona & G. K. Pulluma (2002) a *Longman Grammar of Spoken and Written English (LGSWE)* od D. Bibera (1999).

Větné modifikační konstrukce nacházející se za řídicím podstatným jménem můžeme podle formy slovesa rozdělit na věty finitní a nefinitní. Tyto typy vět jsou z hlediska terminologie dále klasifikovány různě. Zatímco *CGEL* rozlišuje věty vztažné a přístavkové, *CamGr* věty vztažné a doplňkové, *LGSWE* se kloní k rozdělení na větu vztažnou a obsahovou. Hlavní významový rozdíl mezi těmito dvěma větami je ten, že vztažná věta identifikuje a blíže popisuje referenta řídicího členu, kdežto přístavková (doplňková neboli obsahová) věta vyjadřuje jeho vlastní obsah.

V části 2.2 je pozornost zaměřena na dvě postmodifikační konstrukce, které jsou předmětem zkoumání, tj. adjektivní věta vztažná a věta participiální. Základním rysem adjektivní vztažné věty je přítomnost vztažného výrazu (zájmena či příslovce), který nejenže vyznačuje subordinační vztah k větě řídící a anaforicky odkazuje k řídícímu substantivu v nadřazené větě, ale i plní syntaktickou funkci větného členu, kterého zastupuje v podřízené větě (podmět, předmět, jmenná část přísudku, atd.).

Tato část práce dále popisuje participiální konstrukce jako věty, udává přehled realizačních forem a funkcí participiálních vět. V souvislosti s charakterizací participiálních vět mající funkci postmodifikátoru jsou tyto formy kontrastovány s participií plnící funkci adverbiální, neboť tyto dvě konstrukce se od sebe liší ve způsobu interpretace konatele participiálního děje. Zatímco konatel adverbiálních participií je nejčastěji podmět věty řídící, konatelem participií postmodifikačních je entita realizována substantivem ve frázi, jejímž je participium konstituentem. Práce dále pokračuje užší specifikací přítomného a minulého participia ve funkci postmodifikátoru substantivní fráze.

Oddíl 2.3 shrnuje společné a zároveň rozdílné rysy obou konstrukcí. Pozornost je především věnována ekvivalenci mezi finitní větou vztažnou a větou participiální. Za jeden z hlavních rozdílů mezi těmito dvěma konstrukcemi je považována rozdílná míra explicitnosti. Participiální věty představují redukované věty vztažné, a tedy jejich nižší míra explicitnosti v porovnání s finitními větami vyplývá z nižšího počtu gramatických morfémů zastoupených v konstrukci. Méně explicitní forma je prostředkem kondenzace, a zatímco její vyšší výskyt může být pozorován v odborném stylu, v prostě sdělovacím stylu se vyskytuje zřídka (Hladký 1961; Malá 2009).

V neposlední řadě se tato část přehledové kapitoly zabývá vytyčením základních rysů akademického mluveného projevu. Akademický mluvený projev je považován za styl, který se nachází na kontinuu mezi odborným stylem a stylem prostě sdělovacím, kde každý z těchto stylů je umístěn na jednom konci tohoto kontinua. Tento předpoklad je založen na faktu, že akademický mluvený projev je charakteristický svým vysoce informativním charakterem (podobně jako odborný styl), ale stejně jako styl prostě sdělovací patří mezi styly produkované v mluveném modu (Csomay 2000). Druhým cílem práce je tedy analýza lingvistických rysů typické pro akademický mluvený projev z hlediska větné postmodifikace, a popsání, do jaké míry tento styl inklinuje k odbornému stylu či stylu prostě sdělovacímu.

V závěru tato část shrnuje výsledky studie (Šaldová 2005a), jejímž hlavním cílem bylo srovnání adjektivních vět vztažných a vět participiálních plnící funkci postmodifikátorů

podstatného jména v odborném stylu. Na základě těchto výsledků je v kapitole 4 provedeno srovnání užití obou postmodifikačních konstrukcí v mluveném a psaném odborném stylu.

Kapitola 3 obsahuje data, která jsou užitá při samotném výzkumu. Byla provedena excerpce čtyř transkriptů akademického mluveného projevu: dva transkripty ze společenských věd (historie a historie umění) a dva z věd přírodních (biologie, botanika). Excerpovaná délka každého transkriptu byla stanovena výskytem dohromady 50 participiálních vět a vět vztažných s relativem v podmětu. V takto stanovené délce transkriptu byly zároveň vyexcerpovány vztažné věty s relativem v ostatních funkcích než funkci podmětu. Celková délka transkriptu je 15,253. Shromážděno bylo celkem 235 finitních vět (151 vztažných vět s relativem v podmětu a 84 vět se vztažným zájmenem v pozici jiné než podmětu) a 49 vět nefinitních. Celkem tedy 284 dokladů.

Část 3.3 prezentuje frekvence modifikátorů v jednotlivých transkriptech a celkový přehled v jednotlivých registrech. Největší frekvence postmodifikačních konstrukcí, tj. vztažných vět se vztažným zájmenem ve funkci podmětu a vět participiálních, se nachází v sociálních vědách (SOC: 15.7 postmodifikačních vět/tisíc slov) a nejméně v přírodních vědách (NAT: 11.3). Patrný rozdíl mezi vzorky je také v četnosti jednotlivých realizačních struktur. Přestože jsou finitní vědy celkově v SOC a NAT téměř srovnatelné (10.2 vs. 9.7), participiální věty jsou více jak třikrát četnější v SOC než v NAT.

Část 4.1.1 se zaměřuje na syntaktické funkce relativa. Na základě předpokladu, že participiální věty korespondují se vztažnými větami s relativem v podmětu (*subject gap*), jsou všechny finitní věty rozděleny do dvou skupin, a to vztažné věty s relativem v podmětu a s relativem ve funkci jiné (*nonsubject gap*: předmět, jmenná část přísudku, atd.). A právě vztažné věty první skupiny jsou hlavním předmětem zkoumání. Těchto vět je v souboru 151, tj. nadpoloviční většina (64.3%). Jelikož jsou vztažné věty s relativem v podmětu považovány za snáze srozumitelné, jejich počet je nejhojnější v textech odborného stylu (přibližně 75%), kdežto ve stylu prostě sdělovacím jsou tyto typy vět méně frekventované (cca 55%) (Biber et al. 1999: 621-22). Na základě těchto dat není možné jednoznačně určit charakter akademického mluveného projevu, protože z tohoto hlediska se akademický mluvený projev nachází přímo mezi stylem odborným a prostě sdělovacím.

Část 4.1.2 se zabývá distribucí vztažných zájmen. Nejčastějším relativem je vztažné zájmeno *which* (40%), následované zájmenem *that* (32.3%) a *who* (14.9%). Frekvence nulového relativa je naopak v porovnání s *which* poměrně nízká, a proto můžeme usuzovat, že

z hlediska distribuce vztažných zájmen inklinuje akademický mluvený projev více k odbornému stylu, neboť v odborném stylu je relativum *which* zastoupeno nejhojněji, zatímco v běžně sdělovacím stylu se *which* objevuje zřídka (Biber et al. 1999: 611).

V oddílu 4.1.3 je pozornost zaměřena již výhradně na vztažné věty s relativem v podmětu. Jedním z rysů, který se v těchto větách zkoumá (4.1.3.1), je syntaktická funkce postmodifikované jmenné fráze v nadřazené konstrukci. Na základě faktu, že finitní věty v podmětu mají tendenci narušovat plynulost řídicí věty, neboť rozvitější vztažná finitní věta distancuje podmět od slovesa v nadřazené větě, předpokládá se, že participiální věty se budou vyskytovat s větší četností v podmětu. Vztažné finitní věty postmodifikují podmět ve dvaceti jedné procentech případů. V těchto příkladech jsou zahrnuty i *there* konstrukce.

Mezi další charakteristické rysy patří povaha slovesné fráze ve vztažné větě (4.1.3.2), podle které jsou věty rozděleny na příklady s jednoduchou slovesnou formou (přítomný či minulý čas) a případy obsahující analytický morfém. Je tedy možné předpokládat, že věty druhé skupiny nebudou moci být vždy nahrazeny participiální formou, neboť participiální věty jsou ve většině případů realizovány jednoduchou slovesnou formou. Je docela překvapivé, že 62.9% všech vztažných vět obsahuje pouze jednoduchý čas, a to převážně jednoduchý čas přítomný.

Pro ověření předpokladu, že k užití finitní věty může vést potřeba vyjádření složitějších temporálních vztahů v souvětí, je nutné vyloučit vztažné věty obsahující verbonominální predikaci se slovesem *be*, a to z důvodu absence participiální konstrukce pro tuto predikaci. Výsledkem srovnání kombinace času ve větě podřazené a větě nadřazené je zjištěno, že temporální vztahy nejsou hlavním aspektem, který má za následek užití finitní věty, neboť 78% vztažných vět obsahuje jednoduchý čas totožný s časem větě nadřazené.

Další část tohoto oddílu poskytuje přehled lexémů, které se vyskytují v jednoduchých slovesných formách vět vedlejších, za účelem porovnání těchto sloves se slovesy nacházející se ve větách nefinitních.

Mezi vedlejší věty s omezenou možností náhrady patří věty obsahující modální sloveso, neboť vypuštění modálního slovesa způsobí změny v modalitě. Další případ, kdy redukce modifikačním participiem není možná, představují věty, ve kterých složitá verbální fráze vyjadřuje perfektivitu sloužící k vyjádření relativního vztahu předčasnosti či ukončenosti děje. Vedlejší věty obsahující formy průběhové jsou považovány za věty mající nejbližší vztah k participiálním formám. Je zajímavé, že většina vztažných vět se redukovanou formou nahradit nedá, a to na příklad v případech, kdy je průběhová forma užitá k vyjádření

budoucnosti. Vztažné věty se slovesnou formou v pasivu představují nejpočetnější skupinu vedlejších vět obsahující složitou verbální frázi, jelikož tvoří dvacet procent všech vedlejších vět s relativem v podmětu. Obecně jsou tyto věty nahraditelné participiální formou kromě na příklad případů, kdy sloveso vyjadřuje jiný čas než sloveso ve větě nadřazené.

Sekce 4.2 pojednává o participiálních větách, které jsou podle realizační formy rozděleny na *-ing* a *-ed* přičestí. Zatímco v části 4.2.1 je shrnuta celková frekvence obou participiálních konstrukcí, části 4.2.2 a 4.2.3 se zabývají charakteristikou přítomného a minulého přičestí, a to zejména jejich frekvencí ve vzorku, syntaktickými funkcemi, které modifikované substantivum plní v nadřazené větě, a výčtem lexémů sloužící pro srovnání se slovesy obsažených ve větách finitních.

V sekci 4.3 je pozornost věnována několikanásobné postmodifikaci realizované finitními a nefinitními větami. Výsledkem zkoumání je zjištění, že v případě postmodifikace větou finitní a zároveň větou redukovanou, finitní věta vztažná je umístěna za větou nefinitní, a to nejen z důvodu, že postmodifikační charakter věty vztažné je identifikován pomocí uvozujícího relativu, ale i z důvodu, že finitní věta bývá rozvitější, a tudíž podle principu „of end-weight“ bývá umístěna v koncové pozici.

Část 4.4 srovnává kvantitativní výsledky finitních vztažných vět a vět participiálních, a z hlediska jejich distribuce a funkce charakterizuje nejen mluvený a psaný mod (Šaldová 2005a), ale i obě podskupiny odborných textů a akademického mluveného projevu (SOC a NAT).

Mluvený mod vykazuje nepatrně nižší frekvenci užití modifikátorů než mod psaný. Avšak zásadní rozdíl mezi mluveným a psaným modem a zároveň mezi SOC a NAT je v míře užití finitních a nefinitních postmodifikátorů. Zatímco v psaném modu převažují věty nefinitní, v modu mluveném jsou naopak podstatně méně frekventované, což potvrzuje hypotézu, kde větná kondenzace, a tedy méně explicitní forma postmodifikace, se vyskytuje častěji v psaném odborném stylu. Co se týká jednotlivých registrů mluveného modu, v SOC výrazně převažují věty participiální, v NAT se naopak tyto věty vyskytují zřídka. V psaném modu v užití nefinitních postmodifikátorů naopak vyniká NAT, kde je participiálních vět nejvíce. Důvod pro vyšší výskyt participiálních postmodifikátorů v SOC v mluveném modu může být vysvětlen, v porovnání s NAT, nižším zasoupením složených slovesných tvarů, nejnižším počtem verbonominálních predikací s *be*, a nejnižší mírou rozdílnosti časů v nadřazené a vedlejší větě. V psaném modu avšak je situace přesně opačná.

Dalším výrazným rozdílem mezi psaným a mluveným modem je frekvence postmodifikovaného substantiva plnící funkci podmětu v nadřazené větě. V psaném modu je substantivum nejčteněji modifikováno participiální větou, a z toho důvodu, že redukované formy nenarušují větnou stavbu nadřazené věty do takové míry jako věty finitní. V mluveném modu se postmodifikovaná substantiva nefinitní větou ve funkci podmětu vyskytují řídčeji. Toto může být způsobeno tendencí mluveného jazyka pro jednodušší podměty, neboť v mluveném jazyce je zřetelnější „principle of end-weight“.

Závěrem můžeme potvrdit, že akademický mluvený projev jako styl se opravdu díky svému charakteru nachází na kontinuu mezi stylem odborným a stylem prostě sdělovacím. Na základě zkoumaných rysů, tj. celková frekvence všech postmodifikátorů, frekvence relativního zájmena *which* a nulového relativa, můžeme konstatovat, že akademický mluvený projev inklinuje svojí povahou více ke stylu odbornému. Prostě sdělovacímu stylu se akademický mluvený projev blíží jen z hlediska četnosti jednotlivých realizačních forem postmodifikátorů, tzn. akademický mluvený projev vykazuje čtenější užití finitních postmodifikátorů, což koreluje s povahou stylu prostě sdělovacího.

APPENDIX:

The appendix contains all the examples extracted from the four transcripts of academic lectures (cf. Figure 4). All extracted examples are assigned a two-letter symbol indicating their origin and an identification number, which facilitates the retrieval of the examined structure in the appendix and provides a reference to the particular example. The codes of the texts from which the examples were extracted are placed before the studied construction in the superscript format. All the constructions in question are underlined for the sake of clarity.

I. SOCIAL SCIENCE: The Academic Landscape

number	example
AL-01	i want to begin by making a general but i think a highly significant point ^{AL-01} <u>that underpins the bulk of landscape production in nineteenth century France and indeed elsewhere as well</u>
AL-02	for the city landscape is an essentially urban genre and wherever artists may physically paint their pictures ^{AL-02} <u>which is of course very often in urban studios urban centre</u>
AL-03	the first of these categories historical landscape is best represented by the two great seventeenth century masters of the genre Poussin and Claude and here we've got on the right by Claude ^{AL-03} <u>which is just spelled like the name Claude er The Judgement of Paris</u>
AL-04	here it's basically an arena a setting ^{AL-04} <u>which includes some of the elements of history painting a mythological or sometimes a biblical subject classical architecture an episode from ancient history</u>
AL-05	the second category paysage champÅŞtre or rural landscape was used to refer to something like this the image on the right ^{AL-05} <u>which is a seventeenth century Dutch landscape by Ruisdael</u>
AL-06	the story ^{AL-06} <u>that i'm going to be telling in the next er three lectures</u> is of the original primacy of historical landscape the way that's gradually undermined by the ascendance of rural landscape er and the way then that changes to introduce new forms of landscape
AL-07	the story that i'm going to be telling in the next er three lectures is of the original primacy of historical landscape the way ^{AL-07} <u>that's gradually undermined by the ascendance of rural landscape</u> er and the way then that changes to introduce new forms of landscape
AL-08	the story that i'm going to be telling in the next er three lectures is of the original primacy of historical landscape the way that's gradually undermined by the ascendance of rural landscape er and the way then ^{AL-08} <u>that changes to introduce new forms of landscape</u>
AL-09	so this is in a way the first instalment of a trilogy now in the Academy the powerful ruling body of French art ^{AL-09} <u>who organize training and production</u>
AL-10	this is a a painting by an artist ^{AL-10} <u>called Drouais</u> and it's called Marius at Minternae from seventeen-eighty-six
AL-11	the Academy was very keen on promoting the idea of the artist as a learned scholarly professional so landscape deficient both because it wasn't elevated and

	moral enough and because the artist ^{AL-11} <u>who produced it</u> wasn't scholarly enough himself
AL-12	academicians started a kind of campaign i suppose to position the landscape painter as being a learned and morally forceful figure just like his colleague ^{AL-12} <u>who painted history painting</u>
AL-13	the key figure behind this campaign is an artist ^{AL-13} <u>called Pierre-Henri de Valenciennes</u> and his name is spelled V-A-L- E-N- C-I-E- double-N-E-S
AL-14	he's a landscape specialist ^{AL-14} <u>who's working around the turn of the nineteenth century</u>
AL-15	this is Ideal Landscape with Washerwomen from eighteen-o-seven but more important than Valenciennes' painting was a textbook ^{AL-15} <u>he published in eighteen-hundred</u> called Elements of Practical Perspective which proved to be a very influential work right the way through the nineteenth century
AL-16	this is Ideal Landscape with Washerwomen from eighteen-o-seven but more important than Valenciennes' painting was a textbook he published in eighteen-hundred ^{AL-16} <u>called Elements of Practical Perspective</u> which proved to be a very influential work right the way through the nineteenth century
AL-17	this is Ideal Landscape with Washerwomen from eighteen-o-seven but more important than Valenciennes' painting was a textbook he published in eighteen-hundred called Elements of Practical Perspective ^{AL-17} <u>which proved to be a very influential work right the way through the nineteenth century</u>
AL-18	there were two ways of looking at nature and he says and i'm quoting now from his book the first is that ^{AL-18} <u>in which we see nature as it is and represented and represented as faithfully as possible</u>
AL-19	according to this procedure one eliminates objects ^{AL-19} <u>that don't seem interesting enough</u> brings forward others that fit even though they might be far away looks for harmonies and contrasts and finally chooses this or that view because it's more pleasing and picturesque
AL-20	according to this procedure one eliminates objects that don't seem interesting enough brings forward others ^{AL-20} <u>that fit even though they might be far away</u> looks for harmonies and contrasts and finally chooses this or that view because it's more pleasing and picturesque the second is that in which we see nature as it ought to be
AL-21	according to this procedure one eliminates objects that don't seem interesting enough brings forward others that fit even though they might be far away looks for harmonies and contrasts and finally chooses this or that view because it's more pleasing and picturesque the second is that ^{AL-21} <u>in which we see nature as it ought to be</u>
AL-22	in the way enriched imagination presents the view to the eyes of man of genius ^{AL-22} <u>who has seen much composed carefully and analysed and reflected upon the choice that one must make so</u>
AL-23	in the way enriched imagination presents the view to the eyes of man of genius who has seen much composed carefully and analysed and reflected upon the choice ^{AL-23} <u>that one must make so</u>
AL-24	in his book he makes it clear that the artist ^{AL-24} <u>who paints historical landscape</u> will have read the poets by which he means er the great classical poets like Homer and Virgil
AL-25	in his book he makes it clear that the artist who paints historical landscape will have read the poets ^{AL-25} <u>by which he means er the great classical poets like Homer</u>

	and Virgil
AL-26	the painter of paysage hi-, historique will be able to distinguish specific customs and costumes historical and archaeological detail ^{AL-26} <u>that he'll have gleaned from reading</u>
AL-27	there's an issue here about class and institutional status ^{AL-27} <u>which we might er er exemplify as the professional versus the artisan</u>
AL-28	the professional historical landscape painter is connected to a southern tradition of the Italian landscape ^{AL-28} <u>which stretches back to Roman history and Greek history</u> while the more artisanal rural landscape painter belongs to a northern tradition exemplified by Dutch and Flemish artists
AL-29	the professional historical landscape painter is connected to a southern tradition of the Italian landscape which stretches back to Roman history and Greek history while the more artisanal rural landscape painter belongs to a northern tradition ^{AL-29} <u>exemplified by Dutch and Flemish artists</u>
AL-30	every two years a subject was set from either the classics or the Bible and every student ^{AL-30} <u>entering it had to paint a picture of that theme</u>
AL-31	the student ^{AL-31} <u>who was judged to have delivered the best rendition of it was sent to work and study in Rome which at the turn of the nineteenth century was the Mecca of the art</u>
AL-32	the student who was judged to have delivered the best rendition of it was sent to work and study in Rome ^{AL-32} <u>which at the turn of the nineteenth century was the Mecca of the art</u>
AL-33	this is by Cogniet ^{AL-33} <u>whose painting we looked at you remember in the seminars a few weeks ago this is called The Artist</u>
AL-34	it shows Cogniet ^{AL-34} <u>who's just arrived from Paris with a rather nice Italian landscape out of the window Rome</u>
AL-35	visiting Italy was considered crucial to the development of an artist it was the home of antiquity Roman antiquity it was also the home of course of the great masters most notably Raphael ^{AL-35} <u>whom the French Academy absolutely er deified</u>
AL-36	here's two examples of French landscape painters ^{AL-36} <u>working in Rome</u> one an unfinished sketch the other a highly finished picture
AL-37	here's two examples of French landscape painters working in Rome one an unfinished sketch the other a highly finished picture er both ^{AL-37} <u>showing one of the French artists' favourite subjects the Colosseum</u>
AL-38	the image on the right the sketch is by Michallon he's spelled M-I-C-H- A-double-L-O-N ^{AL-38} <u>which is called The View of the Colosseum</u> from around er eighteen early eighteen-twenties i think
AL-39	the image on the right the sketch is by Michallon he's spelled M-I-C-H- A-double-L-O-N which is called The View of the Colosseum from around er eighteen early eighteen-twenties i think and here on the left by an artist ^{AL-39} <u>called Bracassat</u> that's B-R-A- C-A- double-S-A-T the Colosseum from around eighteen-twenty
AL-40	if we the viewers are positioned as tourists ^{AL-40} <u>coming across this view as if we sort of walk down this path</u> and there it is spread out before us the glorious Colosseum and what's meant to be happening here is that the meaning of the architecture is supposed to be inflecting the meaning of the landscape and vice versa
AL-41	here are two winners of the Prix de Rome for landscape on the right the very first winner from eighteen-seventeen Michallon again and this is Democritus and the

	Abderites quite what's going on i don't know i have to say i have to confess ignorance and say i don't even know who the Abderites were er but if you're that interested i'm sure there's a book in the library somewhere and if you find out you can tell me er on the left by an artist ^{AL-41} <u>called Buttura B-U-double-T-U-R-A</u>
AL-42	i think they are both good examples of the kind of work ^{AL-42} <u>that was demanded</u> classical subjects very highly finished very smooth surfaces and very highly composed very sort of artificially put together
AL-43	i think they are both good examples of the kind of work that was demanded classical subjects ^{AL-43} <u>very highly finished</u> very smooth surfaces and very highly composed very sort of artificially put together
AL-44	i think they are both good examples of the kind of work that was demanded classical subjects very highly finished very smooth surfaces and ^{AL-44} <u>very highly composed</u> very sort of artificially put together
AL-45	i think they are both good examples of the kind of work that was demanded classical subjects very highly finished very smooth surfaces and very highly composed ^{AL-45} <u>very sort of artificially put together</u>
AL-46	there's another tree or a s-, bit of foliage further back ^{AL-46} <u>which marks a middle plane</u> and then there's a kind of horizon line which marks a er a plane at the back
AL-47	there's another tree or a s-, bit of foliage further back which marks a middle plane and then there's a kind of horizon line ^{AL-47} <u>which marks a er a plane at the back</u>
AL-48	there's this sort of planar construction to create space it's the same here frontal plane middle plane and then the backdrop almost as if they're sort of backdrops in a stage ^{AL-48} <u>set highly er conventional</u>
AL-49	device there for instance is Claude's landscape with Isaac and Rebecca er and you can see at once that the debt to Claude in terms of composition is enormous in terms of the er planar organization also in the structure of light ^{AL-49} <u>that became very traditional</u>
AL-50	so works like this winners of the Prix de Rome er ^{AL-50} <u>displaying their learning full of intellectual investment</u> showing off classicizing tendency and also very consciously using seventeenth century French models
AL-51	so works like this winners of the Prix de Rome er displaying their learning full of intellectual investment ^{AL-51} <u>showing off classicizing tendency</u> and also very consciously using seventeenth century French models
AL-52	so works like this winners of the Prix de Rome er displaying their learning full of intellectual investment showing off classicizing tendency and also ^{AL-52} <u>very consciously using seventeenth century French models</u>
AL-53	so clearly there's someth-, something ^{AL-53} <u>invested here to do with national identity and sort of the French cultural prowess</u>
AL-54	one often comes across accounts er in sort of a lot of survey books of nineteenth century French art for instance ^{AL-54} <u>which declare that it was the Barbizon painters or even the Impressionists who were the first to go out and paint in the open to make studies in the open air</u>
AL-55	one often comes across accounts er in sort of a lot of survey books of nineteenth century French art for instance which declare that it was the Barbizon painters or even the Impressionists ^{AL-55} <u>who were the first to go out and paint in the open to make studies in the open air</u>
AL-56	again it was one ^{AL-56} <u>that Valenciennes had particularly encouraged</u> and here are a couple of studies done plein air by Valenciennes
AL-57	again it was one that Valenciennes had particularly encouraged and here are a

	couple of studies ^{AL-57} <u>done plein air by Valenciennes</u>
AL-58	when the weather is fine we go into the country together there i give him my views on how to make studies ^{AL-58} <u>that may serve him later in composing pictures</u>
AL-59	there are three particular things ^{AL-59} <u>i'd like to emphasize about that</u>
AL-60	firstly of course simply that Valenciennes er stresses the importance of looking at nature and of making these sketches en plein air in the open and here's two ^{AL-60} <u>he did in Rome</u>
AL-61	these are examples of Valenciennes himself in Rome ^{AL-61} <u>sitting outside with his paints and easel and sketching details atmospheric effects and so forth</u>
AL-62	these are examples of Valenciennes himself in Rome sitting outside with his paints and easel and ^{AL-62} <u>sketching details atmospheric effects and so forth</u>

II. SOCIAL SCIENCE: Marx and Marxism

number	example
MM-01	i think one of the points ^{MM-01} <u>that er is very important about Marx</u> is that Marx's ideas and i i think namex mentioned this last week are a sort of unique fusion of two separate categories of thinking
MM-02	Marx's ideas developed er as philosophical ideas in the first place and it was once he'd kind of developed a er a philosophical view of the world ^{MM-02} <u>based on Hegel and other er thinkers of early nineteenth century Germany</u>
MM-03	he then er began to observe the realities of capitalist society around him and this led to the second layer of his thought the kind of empirical practical pragmatic understanding of the society ^{MM-03} <u>in which he lived</u>
MM-04	now any aspect of Marxist thought has got these two things ^{MM-04} <u>closely infused together</u> and this makes it rather exceptional
MM-05	if you go back before Marx you had philosophers i mentioned Hegel Kant and others ^{MM-05} <u>who were not social analysts</u>
MM-06	and you had people ^{MM-06} <u>who were social analysts Montesquieu er Adam Smith who were not in the true sense philosophers</u>
MM-07	and you had people who were social analysts Montesquieu er Adam Smith ^{MM-07} <u>who were not in the true sense philosophers</u>
MM-08	there's a very er the linkage between them i think is brought out by this perhaps the most famous quotation of from Marx from eighteen-forty-eight from his thesis on Feuerbach ^{MM-08} <u>where he argues that philosophers have only interpreted the world</u>
MM-09	it's with this background in mind that i want to talk particularly about two aspects ^{MM-09} <u>really following from this</u>
MM-10	the question ^{MM-10} <u>which arose almost p-, er permanently in people's minds after Marx</u> was the question of why was it that the revolution that he'd predicted had not come about
MM-11	the question which arose almost p-, er permanently in people's minds after Marx was the question of why was it that the revolution ^{MM-11} <u>that he'd predicted</u> had not come about
MM-12	the first stage in this process really was one ^{MM-12} <u>which began with not Marx himself so much but Engels and the person who became the leading figure in Marxist philosophy after er after Marx Karl Kautsky the leader of the s-, German Social Democratic Party</u>
MM-13	the first stage in this process really was one which began with not Marx himself so much but Engels and the person ^{MM-13} <u>who became the leading figure in Marxist</u>

	<u>philosophy after er after Marx Karl Kautsky the leader of the s-, German Social Democratic Party</u>
MM-14	it meant that the kind of processes ^{MM-14} <u>which were going on with Marx's ideas towards the end of his life and certainly after his death in eighteen-eighty-one</u> were ones which er w-, which er were not er in his view following up the main i-, the main er essence of his ideas
MM-15	it meant that the kind of processes which were going on with Marx's ideas towards the end of his life and certainly after his death in eighteen-eighty-one were ones ^{MM-15} <u>which er w-, which er were not er in his view following up the main i-, the main er essence of his ideas</u>
MM-16	the economic interpretation argued the fundamental factor ^{MM-16} <u>on which all other fac-, social factors depended</u> was er economy particularly the means of production er and ownership of it
MM-17	the economic interpretation argued the fundamental factor on which all other fac-, social factors depended was er economy particularly the means of production er and ownership of it the means of production in different societies ^{MM-17} <u>being land in feudal society machines and industrial society capital and labour er capital in capitalist society labour in in a number of other societies as well</u>
MM-18	the economic interpretation argued the fundamental factor on which all other fac-, social factors depended was er economy particularly the means of production er and ownership of it the means of production in different societies being land in feudal society machines and industrial society capital and labour er capital in capitalist society labour in in a number of other societies as well and the way ^{MM-18} <u>in which those means of production were organized and particularly who owned them</u> hence the basis of class
MM-19	hence the basis of class because classes were divided into those people ^{MM-19} <u>who owned these means of production</u> and those people who were employed to work these means of production er in Marx's terminology in in a capitalist society er the bourgeoisie and the proletariat
MM-20	hence the basis of class because classes were divided into those people who owned these means of production and those people ^{MM-20} <u>who were employed to work these means of production</u> er in Marx's terminology in in a capitalist society er the bourgeoisie and the proletariat
MM-21	Stalin is one of the er leading exponents of this particular version and crude Marxism as it was developed in the Soviet Union in the nineteen late twenties and thirties that society has a kind of basis and a superstructure the economy is the basis the superstructure is everything ^{MM-21} <u>that's built on it</u> social forms but not just social forms also ideas cultural phenomena er law er religion
MM-22	the version of Marxism ^{MM-22} <u>which is most often criticized by people who don't know much about Marx himself</u> is often this particular version of Marxism this er version of Marxism which possibly Marx had in mind when he said he wasn't himself a Marxist
MM-23	the version of Marxism which is most often criticized by people ^{MM-23} <u>who don't know much about Marx himself</u> is often this particular version of Marxism this er version of Marxism which possibly Marx had in mind when he said he wasn't himself a Marxist
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	<u>himself a Marxist</u>
MM-25	the first stage of development of Marxist ideas brings it into this rather er schematic positivist influenced er rule based idea of controlling history history ^{MM-25} <u>working directly through laws and those laws being readily perceptible er and readily er understandable</u>
MM-26	the first stage of development of Marxist ideas brings it into this rather er schematic positivist influenced er rule based idea of controlling history history working directly through laws and those laws ^{MM-26} <u>being readily perceptible er and readily er understandable</u>
MM-27	the first bold effort to try to answer this question er was put was was one ^{MM-27} <u>associated with er the name Eduard Bernstein</u>
MM-28	he challenged the working out of some of those rules ^{MM-28} <u>that we were looking at</u> and he argued that in actual fact the the laws as they were understood by Kautsky and orthodox Marxists the laws of capitalist development were mistaken hence his ideas are often referred to as revisionism
MM-29	instead he argued that first of all the class idea ^{MM-29} <u>that Marx had</u> and i think that er that er namex emphasized last week let me just take that it's probably easier if i just take that completely off there er that all that classes will polarize
MM-30	he argued that the middle class doesn't disappear in fact the middle class is the s-, is the class ^{MM-30} <u>which is expanding most rapidly in Britain in the late n-, nineteenth and early twentieth century so far from polarizing and disappearing into a class struggle between the impoverished and the super rich</u> which is the crude interpretation of Marx
MM-31	he argued that the middle class doesn't disappear in fact the middle class is the s-, is the class which is expanding most rapidly in Britain in the late n-, nineteenth and early twentieth century so far from polarizing and disappearing into a class struggle between the impoverished and the super rich ^{MM-31} <u>which is the crude interpretation of Marx</u>
MM-32	the reason for this was that ownership of capital ownership of the means of production was not as Marx thought polarizing through competition ^{MM-32} <u>driving poor er er sec-, er er failed producers out of the market</u> and creating a smaller and smaller number of big er successful producers
MM-33	the reason for this was that ownership of capital ownership of the means of production was not as Marx thought polarizing through competition driving poor er er sec-, er er failed producers out of the market and ^{MM-33} <u>creating a smaller and smaller number of big er successful producers</u>
MM-34	so that from Bernstein's point of view er capitalism itself was beginning to evolve er a kind o-, would hopefully evolve into a kind of socialism ^{MM-34} <u>which could be developed through pursuit of reformism through pursuing democracy through pursuing er the er current paths of capitalist development without revolution</u>
MM-35	in other words for him the idea of future communism or whatever er i-, utopian society ^{MM-35} <u>you had</u> was not the crucial thing
MM-36	the crucial thing was the movement towards it er and the ideas that er the the the the the workers movement for reform for change ^{MM-36} <u>bringing people together</u> er things like trade unions eventually the Labour Party these were all things which were developing in a big way in the eighteen-nineties and around nineteen-hundred in the in Britain
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	things like trade unions eventually the Labour Party these were all things ^{MM-37} <u>which were developing in a big way in the eighteen-nineties and around nineteen-hundred in the in Britain</u>
MM-38	you'll realize that that is exactly the split ^{MM-38} <u>which has occurred in the socialist movement in the twentieth century between those who follow the revolutionary path and those who follow this reformist path</u>
MM-39	you'll realize that that is exactly the split which has occurred in the socialist movement in the twentieth century between those ^{MM-39} <u>who follow the revolutionary path and those who follow this reformist path</u>
MM-40	you'll realize that that is exactly the split which has occurred in the socialist movement in the twentieth century between those who follow the revolutionary path and those ^{MM-40} <u>who follow this reformist path</u>
MM-41	the idea that that er th-, i mean the the problem ^{MM-41} <u>that arises from this that socialism is split of course has helped er to maintain socialism</u>
MM-42	the revolutionary side of Marxism was given a new lease of life naturally by the Russian Revolution er but also by some ideas ^{MM-42} <u>which preceded it</u>
MM-43	the er person er ^{MM-43} <u>who engendered a number of these ideas</u> is er Rudolf Hilferding a an Austrian economist and socialist er who himself ended up more of a Bernsteinian than a revolutionary
MM-44	the er person er who engendered a number of these ideas is er Rudolf Hilferding a an Austrian economist and socialist er ^{MM-44} <u>who himself ended up more of a Bernsteinian than a revolutionary</u>
MM-45	there were i mean today we see a capitalism of giant corporations ^{MM-45} <u>bestriding the globe larger than nation states holding nation states to ransom</u>
MM-46	according to Hilferding capitalism was now based not on individuals but on banks and other financial institutions ^{MM-46} <u>which became gigantic pools lakes of anonymous capital er as they are today</u>
MM-47	it's a great anonymous pool of capital ^{MM-47} <u>which is not controlled by individuals</u>
MM-48	that money is is allocated by professionals ^{MM-48} <u>who don't own the money</u> er by professional financial advisers fina-, financial managers for these institutions investment managers and so on and so forth
MM-49	this was one of the reasons ^{MM-49} <u>why there were super profits being made er and so on and so forth</u>
MM-50	this was one of the reasons why there were super profits ^{MM-50} <u>being made er and so on and so forth</u>
MM-51	this meant capitalism itself was becoming more organized this was a second concept ^{MM-51} <u>he had organized</u>
MM-52	the market was a kind of er tempestuous ocean ^{MM-52} <u>on which capitalist enterprises had to sink or swim er in order to protect themselves from this tempestuous sea</u>
MM-53	he was pointing to this as a way ^{MM-53} <u>in which big capital had survived the predictions of Marx</u>
MM-54	the points from the revolutionary's poi-, er view is that certain revolutionaries Lenin in the forefront seized on Hilferding's ideas as a justification for the potential for revolution in the face of Bernstein's criticism er and Bernstein's revisionism because the conclusion ^{MM-54} <u>which Lenin drew from Hilferding's ideas of organ-, organized capitalism</u> was that here was capitalism itself developing institutions which could be taken over by a future revolutionary state
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MM-57	instead of having a whole inchoate class of capital owners ^{MM-57} <u>running the capitalist economy</u> you now had these key financial managers who were working for banks for salaries
MM-58	instead of having a whole inchoate class of capital owners running the capitalist economy you now had these key financial managers ^{MM-58} <u>who were working for banks for salaries</u>
MM-59	Lenin saw this as as a-, a-, as er monopoly capitalism as a step towards potential socialism because sen-, socialism is supposed to be a rational controlled organized society er one ^{MM-59} <u>which was er in which human beings er called the tune and organized society</u> the way they wanted it not one in which society called the tune and organized human beings in whatever was appropriate to the given economic er conditions of the day
MM-60	Lenin saw this as as a-, a-, as er monopoly capitalism as a step towards potential socialism because sen-, socialism is supposed to be a rational controlled organized society er one which was er in which human beings er called the tune and organized society the way ^{MM-60} <u>they wanted it</u> not one in which society called the tune and organized human beings in whatever was appropriate to the given economic er conditions of the day
MM-61	Lenin saw this as as a-, a-, as er monopoly capitalism as a step towards potential socialism because sen-, socialism is supposed to be a rational controlled organized society er one which was er in which human beings er called the tune and organized society the way they wanted it not one ^{MM-61} <u>in which society called the tune and organized human beings</u> in whatever was appropriate to the given economic er conditions of the day
MM-62	secondarily Lenin also looked at another phenomenon of the late nineteenth century as did Rosa Luxemburg and Nikolai Bukharin to argue that one of the reasons for the growth of these big monopolies and the expansion of capitalism was imperialism that er ^{MM-62} <u>where Marx might have thought that capitalist ec-, capitalist er er r-, profit rates would fall</u>
MM-63	Lenin er and these thinkers were still fairly much in the tradition of the semi positivistic er interpretation of Marx since the Russian Revolution particularly since many people er on the left criticized the Russian Revolution and the way ^{MM-63} <u>it was developing from</u> very early on including including Rosa Luxemburg who was very worried about the dictatorial and anti-democratic tendencies of Lenin and the Russian Revolution in nineteen-seventeen and nineteen-eighteen
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	<u>was very worried about the dictatorial and anti-democratic tendencies of Lenin and the Russian Revolution in nineteen-seventeen and nineteen-eighteen</u>
MM-65	very early on er many er thinkers began to look in different directions for er new inspiration about Marxist ideas and these are ones ^{MM-65} <u>which begin to feed in to</u> er which begin to feed in to a new er way of looking at society
MM-66	very early on er many er thinkers began to look in different directions for er new inspiration about Marxist ideas and these are ones which begin to feed in to er ^{MM-66} <u>which begin to feed in to a new er way of looking at society</u>
MM-67	these are ones ^{MM-67} <u>which become particularly influential for twentieth century er Marxist hi-, and other historiography</u>
MM-68	the struggle for them to develop their own ideas and for them to become part of a larger movement ^{MM-68} <u>focused around particular ideas</u> and to become aware of their situation in society is one of the reas-, is one of the factors er why or or or the fact this hasn't happened is one of the reasons why society er why the revolution that Marx expected had not taken place
MM-69	the struggle for them to develop their own ideas and for them to become part of a larger movement focused around particular ideas and to become aware of their situation in society is one of the reas-, is one of the factors er why or or or the fact this hasn't happened is one of the reasons ^{MM-69} <u>why society er why the revolution that Marx expected had not taken place</u>
MM-70	the struggle for them to develop their own ideas and for them to become part of a larger movement focused around particular ideas and to become aware of their situation in society is one of the reas-, is one of the factors er why or or or the fact this hasn't happened is one of the reasons why society er why the revolution ^{MM-70} <u>that Marx expected had not taken place</u>
MM-71	the earliest of these although he's often forgotten is Antonio Labriola ^{MM-71} <u>who was perhaps the first person to begin to break with er the more er positivistic interpretation of Marxism</u>
MM-72	he pointed to the fact that what materialist theory represented for him was the first attempt to create a sort of er general science general social science ^{MM-72} <u>unifying different historical processes</u>
MM-73	the materialist theory is the culminating point of this process what he meant was that in looking at history and the way ^{MM-73} <u>it develops</u> er materialism and the materialist theory is the first to break away from the compartmentalization of history into religious history history of politics er history of the law constitutional history and so on
MM-74	this has been er a massive er development in er twentieth century historical studies and twentieth century historical understanding that there is nothing these days ^{MM-74} <u>which is separate from history</u>

III. NATURAL SCIENCE: Methods and Developments in Plant Breeding

number	example
MD-01	we are completely dependent on plants okay we're not completely dependent on animals we are completely dependent on plants we either eat them or eat the thing ^{MD-01} <u>that ate them</u>
MD-02	they are the only route or basically the only route ^{MD-02} <u>that we can go from the inorganics C-O-two et cetera to the organic</u>
MD-03	food is not the only product ^{MD-03} <u>we get from from plants</u>

MD-04	they're ones ^{MD-04} <u>i'm more familiar with</u> but of course there are all the ornamentals for a start which are important certainly commercially important
MD-05	they're ones i'm more familiar with but of course there are all the ornamentals for a start ^{MD-05} <u>which are important certainly commercially important</u>
MD-06	there are also a whole range of other things ^{MD-06} <u>that we get from plants drugs for instance clothing paper rubber dyes</u>
MD-07	all these sort of products are come from plants and are ones ^{MD-07} <u>which can be subject of course to plant breeding to crop improvement et cetera</u>
MD-08	we may be talking about quite narrow things but you need to bear in mind the broader context ^{MD-08} <u>in which plants are are there</u>
MD-09	he'd go back to the same place to collect seed or use the seed ^{MD-09} <u>he'd grown</u>
MD-10	if a neighbour had a crop ^{MD-10} <u>that was growing particularly well you'd not be surprised if his neighbours had a-, acquired seed or were given it by him in one way or another</u>
MD-11	particular types would therefore tend to be er multiplied and so by this picking of the best then you'd start to get qu-, fairly quickly at least over a reasonable times types ^{MD-11} <u>that were different from the wild er ones growing around them</u>
MD-12	particular types would therefore tend to be er multiplied and so by this picking of the best then you'd start to get qu-, fairly quickly at least over a reasonable times types that were different from the wild er ones ^{MD-12} <u>growing around them</u>
MD-13	in other words you'd start to get domesticated forms ^{MD-13} <u>which were different from the general population of of the wild plants around</u>
MD-14	these would then start to form almost exclusively the basis for the p-, plants the crops ^{MD-14} <u>that were cultivated</u>
MD-15	this was basically a lot of it ^{MD-15} <u>carried out by people who were simply growing producing things and knowing what they wanted to to grow and produce</u>
MD-16	this was basically a lot of it carried out by people ^{MD-16} <u>who were simply growing producing things and knowing what they wanted to to grow and produce</u>
MD-17	and i'm not er in any way belittling their contribution it's very very big and they did it without the sort of knowledge ^{MD-17} <u>that mostly we're going to talk about</u>
MD-18	well in many ways they're still the same objectives in broad terms ^{MD-18} <u>that were originally the driving force</u> and a major one is increasing productivity certainly in most of the crop plants
MD-19	we do get quite a lot of discussion about whether this means we should not produce cultivars or types ^{MD-19} <u>that are more highly productive et cetera</u> but if you think about it there's really no industry no i-, system by which increased efficiency and productivity is not sensible
MD-20	we do get quite a lot of discussion about whether this means we should not produce cultivars or types that are more highly productive et cetera but if you think about it there's really no industry no i-, system ^{MD-20} <u>by which increased efficiency and productivity is not sensible</u>
MD-21	i'm not suggesting that we should ignore things like the environmental impact ^{MD-21} <u>that we're having</u> this is something else that we have to consider
MD-22	i'm not suggesting that we should ignore things like the environmental impact that we're having this is something else ^{MD-22} <u>that we have to consider</u>
MD-23	if we're talking for instance about low input production then we do need to have cultivars ^{MD-23} <u>which are suited to that</u>
MD-24	you got to look for ones ^{MD-24} <u>that grow well for instance without high nitrogen inputs</u> that possibly do grow quite well competitively with weeds that are resistant

	to many of the pests and diseases
MD-25	you got to look for ones that grow well for instance without high nitrogen inputs ^{MD-25} <u>that possibly do grow quite well competitively with weeds that are resistant to many of the pests and diseases</u>
MD-26	you got to look for ones that grow well for instance without high nitrogen inputs that possibly do grow quite well competitively with weeds ^{MD-26} <u>that are resistant to many of the pests and diseases</u>
MD-27	so the need for the increase in production is still there and is still a major driving force the other thing ^{MD-27} <u>which you need to bear in mind</u>
MD-28	most of the food crops have to be grown locally to be used effectively so many countries there's still a very real need to feed the people ^{MD-28} <u>that are there</u>
MD-29	you can see this is not something ^{MD-29} <u>that's going to go away very quickly or very easily</u>
MD-30	so one of the objectives of plant breeding is really to produce lines cultivars or varieties and i use those terms interchangeably ^{MD-30} <u>that are er better adapted to the particular environmental conditions under which they're expected to grow</u>
MD-31	so one of the objectives of plant breeding is really to produce lines cultivars or varieties and i use those terms interchangeably that are er better adapted to the particular environmental conditions ^{MD-31} <u>under which they're expected to grow</u>
MD-32	there's not a universal type of cultivar it's got to be cultivars ^{MD-32} <u>that are suited to the particular conditions under which they're going to grow</u>
MD-33	there's not a universal type of cultivar it's got to be cultivars that are suited to the particular conditions ^{MD-33} <u>under which they're going to grow</u>
MD-34	these might be climatic conditions ^{MD-34} <u>which clearly vary quite dramatically around the world</u>
MD-35	these are the sort of considerations ^{MD-35} <u>that you need when you're thinking about what they're going to be adapted to</u>
MD-36	so this is the amount ^{MD-36} <u>that you can actually you get for the purpose that you're considering so the amount that you actually get to eat off it the amount you get processed from it the amount that you can actually use after storage</u>
MD-37	so this is the amount that you can actually you get for the purpose ^{MD-37} <u>that you're considering so the amount that you actually get to eat off it the amount you get processed from it the amount that you can actually use after storage</u>
MD-38	so this is the amount that you can actually you get for the purpose that you're considering so the amount ^{MD-38} <u>that you actually get to eat off it the amount you get processed from it the amount that you can actually use after storage</u>
MD-39	so this is the amount that you can actually you get for the purpose that you're considering so the amount that you actually get to eat off it the amount ^{MD-39} <u>you get processed from it the amount that you can actually use after storage</u>
MD-40	so this is the amount that you can actually you get for the purpose that you're considering so the amount that you actually get to eat off it the amount you get ^{MD-40} <u>processed from it the amount that you can actually use after storage</u>
MD-41	so this is the amount that you can actually you get for the purpose that you're considering so the amount that you actually get to eat off it the amount you get processed from it the amount ^{MD-41} <u>that you can actually use after storage</u>
MD-42	the next consideration ^{MD-42} <u>that has become much more recognized</u> is the need for stability of yield
MD-43	the other way ^{MD-43} <u>that's also been done</u> is to look at the er plant breeding and the resistance to things like biotic and abiotic stresses to cut down the year to year

	variation
MD-44	although it seems obvious it's not something ^{MD-44} <u>that's been too highly er stressed before</u>
MD-45	the next thing ^{MD-45} <u>that as i say has been having increasing emphasis</u> is the quality of the product
MD-46	we've got rid of all the good qualities of these and to some extent it's it's true er but it's certainly something ^{MD-46} <u>that is much more er focused on</u>
MD-47	there's also things like the calorific value er co-, protein content fat level vitamin concentration all these things are aspects ^{MD-47} <u>that do vary between different genotypes</u> and you can select for within the within the crop
MD-48	then there's the environmental impact ^{MD-48} <u>which we've touched on before agriculture</u>
MD-49	we do the work for intensive agricultural production there is very little in this country ^{MD-49} <u>which you could call a natural environment</u>
MD-50	it depends er to a despite people ^{MD-50} <u>protesting about er the effects on the countryside</u>
MD-51	it's certainly framed and a product of agricultural production so we do have to to bear this in mind when you look at other countries and you talk about them ^{MD-51} <u>not destroying their rainforests and all the rest of it</u> which i fully sympathize with
MD-52	it's certainly framed and a product of agricultural production so we do have to to bear this in mind when you look at other countries and you talk about them not destroying their rainforests and all the rest of it ^{MD-52} <u>which i fully sympathize with</u>
MD-53	you have to remember that's exactly what we have done we have taken out all our forests and put in agriculture but it's something ^{MD-53} <u>that er er say we need to to think carefully about</u>
MD-54	that is something ^{MD-54} <u>we should or we could go for and to a certain extent it is being done again</u>
MD-55	you expect the thing to be grown if it's going to be grown in a high input system then you will have cultivars ^{MD-55} <u>that will respond and grow in that situation</u>
MD-56	as i said one of the primary aims is to produce varieties ^{MD-56} <u>which are better adapted</u> but the second part of that is to the particular environmental conditions under which they're expected to grow to produce varieties that are growing under these conditions
MD-57	as i said one of the primary aims is to produce varieties which are better adapted but the second part of that is to the particular environmental conditions ^{MD-57} <u>under which they're expected to grow to produce varieties that are growing under these conditions</u>
MD-58	as i said one of the primary aims is to produce varieties ^{MD-56} <u>which are better adapted</u> but the second part of that is to the particular environmental conditions under which they're expected to grow to produce varieties ^{MD-58} <u>that are growing under these conditions</u>
MD-59	you do have to think of a whole series of th-, of things depending on how broadly you expect the the two ^{MD-59} <u>that you're producing to grow</u>
MD-60	there are quite a variety of different ways ^{MD-60} <u>in which you can grow crops</u>
MD-61	so this is something ^{MD-61} <u>which is important to bear in mind</u>
MD-62	so the objectives of the plant breeder are to increase usable yield increase stability make the crop more nutritive reduce ecological disadvantages and produce types ^{MD-62} <u>that basically suit the growing conditions and the needs of the people who are growing them</u>

MD-63	so the objectives of the plant breeder are to increase usable yield increase stability make the crop more nutritive reduce ecological disadvantages and produce types that basically suit the growing conditions and the needs of the people ^{MD-63} <u>who are growing them</u>
MD-64	there are however as i pointed out at the start were the number of other factors ^{MD-64} <u>that you need to worry about</u>
MD-65	you only have to think of the changes ^{MD-65} <u>that have occurred in food consumption in this country</u> or any of the developing ones to see what happens in the in the developed ones
MD-66	when i started as a plant breeder as a potato breeder at least then the selection was all for a medium-size potato tuber ^{MD-66} <u>that was what were required by the housewife</u>
MD-67	another question ^{MD-67} <u>that you might er try and ask as a plant breeder</u> is what is going to be the spectrum of pests and diseases in seven years' time
MD-68	they're real problems in terms of the breeder ^{MD-68} <u>defining the aims and objectives</u>
MD-69	i'm sure you've all got some reasonable ideas from the lectures ^{MD-69} <u>you've already er been to</u> about the some of the general features of plant breeding
MD-70	the first thing ^{MD-70} <u>you need to do</u> is to either release or produce genetic variation
MD-71	if you want to select for something ^{MD-71} <u>that's different</u> you've got to have a difference there to start with
MD-72	as i say you need variation ^{MD-72} <u>that is genetical</u> you need things that are inherited
MD-73	as i say you need variation that is genetical you need things ^{MD-73} <u>that are inherited</u>
MD-74	so we take two lines ^{MD-74} <u>which have between them the characters or the expressions of the characters we want</u>
MD-75	so we take two lines which have between them the characters or the expressions of the characters ^{MD-75} <u>we want</u>
MD-76	so we get the differences to segregate out and we try then to select the ones ^{MD-76} <u>which have the right combination characters</u>
MD-77	mutations are naturally-occurring events but you can increase their frequency by using a mutagen ^{MD-77} <u>ionizing radiation</u>
MD-78	we can use wild ancestors or related species to cross with our cultivated species to increase the amount of variation ^{MD-78} <u>we have available to try</u>
MD-79	it can be if for example you use a cultivar ^{MD-79} <u>that's been widely grown</u>
MD-80	you've had all these things ^{MD-80} <u>which determine er then how you appear</u> you can easily for instance affect people's height by their nutrition or at least relatively easily so you only have to look at their history
MD-81	different people ^{MD-81} <u>given exactly the same food</u> react differently
MD-82	we have this complex of underlying factors and the thing ^{MD-82} <u>that's critical to us as a plant breeder</u>

IV. NATURAL SCIENCE: The Science of Transplantation

number	Example
ST-01	we talk about the host ^{ST-01} <u>that is the person who receives the transplantation whatever it is</u>
ST-02	we talk about the host that is the person ^{ST-02} <u>who receives the transplantation whatever it is</u>
ST-03	although in fact more commonly the term ^{ST-03} <u>we use</u> is recipient somebody who receives the graft and then secondly the partner in this business of course is the

	donor and that is the one who provides the graft
ST-04	although in fact more commonly the term we use is recipient somebody ^{ST-04} <u>who receives the graft</u> and then secondly the partner in this business of course is the donor and that is the one who provides the graft
ST-05	although in fact more commonly the term we use is recipient somebody who receives the graft and then secondly the partner in this business of course is the donor and that is the one ^{ST-05} <u>who provides the graft</u>
ST-06	now donors are going to fall into two main categories those ^{ST-06} <u>that are alive</u> and those that are dead
ST-07	now donors are going to fall into two main categories those that are alive and those ^{ST-07} <u>that are dead</u>
ST-08	if somebody dies in a traffic accident or is in the intensive therapy unit or something like that and is on a heart lung machine ^{ST-08} <u>which they're about to turn off</u> okay then the surgeons come in and whip out the bits the kidney the liver the lungs and so
ST-09	there's a lot of ethics er ^{ST-09} <u>which well namex will deal with tomorrow Thursday</u>
ST-10	there are three other simple terms ^{ST-10} <u>that i need to define</u> one is autograft
ST-11	i was talking to a surgical friend of mine and she was describing to me the sort of facial reconstructions ^{ST-11} <u>that happen in severe burn patients er i-, or severe or in situations where there's been a severe d-, dec-, severe accident</u>
ST-12	she was describing to me the sort of facial reconstructions that happen in severe burn patients er i-, or severe or in situations ^{ST-12} <u>where there's been a severe d-, dec-, severe accident and there's been extensive damage say to the face</u>
ST-13	they transplant bits of bone er from the femur or a humerus or something like that to reconstruct the bone and muscle ^{ST-13} <u>they get from somewhere else</u>
ST-14	now people you will recollect the use of the world word allele ^{ST-14} <u>which means different</u>
ST-15	allogeneic graft is a term ^{ST-15} <u>which is often used simultaneously s-, synonymously</u>
ST-16	so let's briefly look at the range of transplant medicine what is done and why i'm going to talk briefly about currently successful grafts that is grafting transplanting ^{ST-16} <u>which in which is w-, which is in use in medical practice today</u>
ST-17	now blood transfusion is obviously a kind of graft ^{ST-17} <u>which has been in use for a very long time</u>
ST-18	blood transfusions er have been attempted were attempted in th-, in in the nineteenth century and th-, there were a number of problems ^{ST-18} <u>immediately discovered</u>
ST-19	the major problem comes from the A-B-O blood group system er ^{ST-19} <u>which i guess many of you will be familiar with</u>
ST-20	there are on the surface there is on the surface of red cells an antigen ^{ST-20} <u>which occurs in three er allelic forms</u> there's the A form the B form and the null or zero form
ST-21	the consequence o-, of the damage ^{ST-21} <u>that's done</u> is often very severe illness er indeed death in some cases
ST-22	you can eliminate the leukocytes fairly straightforwardly by a a kind of er gradient centrifugation so that you can prepare blood ^{ST-22} <u>which is essentially completely free of leukocytes</u>
ST-23	now prions ^{ST-23} <u>which are the C-J-D organism</u> er are in leukocytes
ST-24	blood transfusion is a form of transplantation ^{ST-24} <u>which is very straightforward er and sorted out</u>

ST-25	everybody is familiar with what bone marrow is bone marrow is the er or is the tissue ^{ST-25} <u>which generates all the haema-, haematopoietic tissues the blood and the white blood cells er and o-, other parts of the haematopoietic system</u>
ST-26	individuals ^{ST-26} <u>who have failed bone marrow er are going to be very sick er and a life saving treatment is the trans plantation of bone marrow into those individuals</u>
ST-27	when i say bone marrow transplantation actually i mean it in a slightly wider sense it can be the actual bone marrow ^{ST-27} <u>which is taken from the donor's bone and i have had it i have done it and i tell you it is very painful</u>
ST-28	those of you ^{ST-28} <u>who are familiar with immunology will recollect that C-D-thirty-four is the antigen which defines the er pluripotent stem cell which generates all cells of the haematopoietic ser-, system</u>
ST-29	those of you who are familiar with immunology will recollect that C-D-thirty-four is the antigen ^{ST-29} <u>which defines the er pluripotent stem cell which generates all cells of the haematopoietic ser-, system</u>
ST-30	those of you who are familiar with immunology will recollect that C-D-thirty-four is the antigen which defines the er pluripotent stem cell ^{ST-30} <u>which generates all cells of the haematopoietic ser-, system</u>
ST-31	you can get C-D-thirty-four cells out of the bone marrow into the peripheral circulation by treating people with certain cytokines ^{ST-31} <u>which cause the C-D-thoity-fo thirty-four cell to proliferate and move from the bone marrow into the periphery into the circulation</u>
ST-32	bone marrow transplantation is used broadly in these two situations the one major condition er ^{ST-32} <u>where the bone marrow completely is non-functional is a condition called SCID severe combined immunodeficiency</u>
ST-33	bone marrow transplantation is used broadly in these two situations the one major condition er where the bone marrow completely is non-functional is a condition ^{ST-33} <u>called SCID severe combined immunodeficiency</u>
ST-34	and the other situation er ^{ST-34} <u>where bone marrow fails completely is in certain therapeutic manoeuvres carried out in the treatment of some cancers</u>
ST-35	some of you ^{ST-35} <u>writing the essay on on gene therapy will have heard about SCID in the context of gene therapy so you will recollect that SCID is an inherited failure of the ontogeny of T-cells</u>
ST-36	individuals ^{ST-36} <u>who've inherited this condition fail to produce functional T-cells what that means is not having T-cells is that essentially you have no immune responsiveness at all</u>
ST-37	you are very sick extremely susceptible to infection okay quite simply in this situation bone marrow transplantation provides the patient with normal T-cells ^{ST-37} <u>which are of course derived from the donor</u>
ST-38	if you treat patients with cancer with these drugs a consequence is damage to all those organs and tissues ^{ST-38} <u>which are rapidly proliferating</u>
ST-39	what we do what is done rather is that the patients ^{ST-39} <u>who are treated with very large doses of therapy to destroy the cancer are what what is called rescued by bone marrow transplantation</u>
ST-40	equally transplanted marrow in this in some situations also seems to have an anti-cancer effect ^{ST-40} <u>which is a by-product a bonus if you like in other words the transplanted marrow seems to develop some sort of immune response to the cancer</u>
ST-41	the disadvantage of the autograft is that potentially the engrafted marrow carries with it cancer cells okay ^{ST-41} <u>which of course is self-defeating because the cancer cells will then start growing again</u>

ST-42	you have immunological problems ^{ST-42} <u>which i'll describe presently</u>
ST-43	i think the autograft generally is preferred because it's easier to manage because the immunological consequences of the allograft can be very severe ^{ST-43} <u>which we'll get on to in a moment</u>
ST-44	this is the sick patient ^{ST-44} <u>who has a cancer say originating in the stomach which has spread about the body</u>
ST-45	this is the sick patient who has a cancer say ^{ST-45} <u>originating in the stomach</u> which has spread about the body
ST-46	this is the sick patient who has a cancer say originating in the stomach ^{ST-46} <u>which has spread about the body</u>
ST-47	now this patient is going to die unless you can treat the cancer ^{ST-47} <u>that's spread about the body</u>
ST-48	and this was and continues to be a very serious problem is that the success of the graft depends on the feasibility of the surgery ^{ST-48} <u>required to transfer the solid organ from the donor to the recipient</u>
ST-49	it's not practical to transplant things like pancreas so this is the first consideration is the surgery practical so assuming that we have got through to the situation ^{ST-49} <u>where we have er practical surgery for the transplantation of a tissue</u>
ST-50	this is the scientific aspect ^{ST-50} <u>that i really need to talk about to dwell on in some detail</u>
ST-51	i should have should have said at the beginning that some of the material ^{ST-51} <u>that i'm presenting now</u> obviously is related to what i presented to you in the second year
ST-52	graft rejection is the er phenomenon ^{ST-52} <u>in which the transplanted organ er is damaged fails through large-scale inflammation er and then literally starts to fall apart under immunological attack</u>
ST-53	this is because there are alloantigens on the in the and on the graft ^{ST-53} <u>which are different from the self-antigens</u>
ST-54	adaptive immune mechanisms develop in the host ^{ST-54} <u>which will eliminate the transplanted the non-self organ non-self tissue</u>
ST-55	in the situation of the solid organ allograft or indeed xenograft er the host er ^{ST-55} <u>which has an intact immune system</u> is rejecting the graft
ST-56	remember that particularly in the kidney say the endothelium provides a very has a very important functional role 'cause this the endothelium ^{ST-56} <u>which performs the filtration in the glomerulus and the various other bits and pieces of the kidney</u>
ST-57	i think the point has been made quite clearly that transplantation despite the initial costs of the actual operation is in the longer run much cheaper than dialysis dialysis i forget what it costs five-thousand a year something like that whereas once you've done the transplant ^{ST-57} <u>which maybe costs ten-thousand</u>
ST-58	indeed the main limitation as i suspect ^{ST-58} <u>you are all familiar</u> is er the availability of donors
ST-59	now experience with patients ^{ST-59} <u>who've been transplanted</u> implies has told us taught us that there are actually three forms of rejection three different kinds of rejection er which are described as hyperacute and acute and chronic
ST-60	now experience with patients who've been transplanted implies has told us taught us that there are actually three forms of rejection three different kinds of rejection er ^{ST-60} <u>which are described as hyperacute and acute and chronic</u>
ST-61	what happens is that if there is hyperacute rejection ^{ST-61} <u>going on immediately or very very quickly before the cessation of the operation</u> er it will be seen that the

	kidney starts to swell become oedematous okay starts to swell and goes much darker in colour
ST-62	what's happening is that kidney function starts rapidly to decline so it's all the symptoms of end-stage renal failure ^{ST-62} <u>that you will have heard from Dr namex this morning</u>
ST-63	it's due to the presence in the patient of antibodies circulating antibodies ^{ST-63} <u>which are specific for the transplanted tissue</u> which recognize antigens on a transplanted tissue especially by recognizing alloantigens on the endothelium of the transplanted tissue
ST-64	it's due to the presence in the patient of antibodies circulating antibodies which are specific for the transplanted tissue ^{ST-64} <u>which recognize antigens on a transplanted tissue especially by recognizing alloantigens on the endothelium of the transplanted tissue</u>
ST-65	the other situation ^{ST-65} <u>where you are likely to get these antigens antibodies sorry arising</u> is where there's been blood transfusions
ST-66	you had the blood the red blood cells but the leukocytes will bear antigens ^{ST-66} <u>that are shared by the endothelium</u>
ST-67	so if by chance you've been transplanted with blood ^{ST-67} <u>that shares antigens with your tran-</u> , sorry so if by chance you've been transfused with blood that shares antigens with the donor tissue then you will have antibodies to it
ST-68	so if by chance you've been transplanted with blood that shares antigens with your tran-, sorry so if by chance you've been transfused with blood ^{ST-68} <u>that shares antigens with the donor tissue</u> then you will have antibodies to it