

Aspects of iconicity and economy in the choice between the *s*-genitive and the *of*-genitive in English¹

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Abstract

This paper deals with genitive variation in English as a case of grammatical variation. In particular, it is investigated how the factors animacy, topicality and possessive relation affect the choice between the *s*-genitive and the *of*-genitive. These factors are linked to iconic principles and therefore allow for predictions as to which genitive construction should be the preferred one in certain contexts. In an experimental study with British and American speakers of English these predictions are tested and indeed confirmed. The analysis shows that the relative importance of the three factors is: animacy > topicality > possessive relation). While this hierarchy as such turns out to be unaffected by Standard variety and diachrony, a significant increase of the *s*-genitive with inanimate possessors can be observed as an ongoing change-in-progress phenomenon, both in British and American English (though more pronounced in the latter). Comparing the results of the ModE data with a corpus analysis of Late Middle/Early Modern English, finally a diachronic scenario is proposed showing how iconicity and economy interact diachronically, leading to a greater preference of the *s*-genitive.

1. Introduction

The present paper is an empirical study on genitive variation in English, i.e. on the alternation between the *s*-genitive (*the boy's mother*) and the *of*-genitive (*the mother of the boy*), and it links to the question of what determines grammatical variation in English in a number of ways.² The analysis focuses on the factors animacy, topicality and possessive relation. These factors allow for predictions as to why the *s*-genitive should be preferred in certain contexts rather than in others. In this respect, the present paper will go beyond merely descriptive studies of grammatical variation and offer a possible explanation for why the distributional pattern found is the way it is. The underlying hypothesis is that the choice of the *s*-genitive is determined by iconic principles, and the predictions are derived on the grounds of general cognitive,

psychological principles and psycholinguistic evidence (for such a cognitive/processing approach to grammatical approaches see also e.g. Bock 1982; Hawkins 1994, this volume; Rohdenburg 1996, this volume; Wasow 1997; Arnold *et al.* 2000; Mondorf, this volume). I also consider how the factors animacy, topicality and possessive relation interact with each other when a speaker has to choose between the *s*-genitive and the *of*-genitive, thereby also evaluating their relative importance. Moreover, in the present study genitive variation are not only looked at from a purely synchronic angle but also include a diachronic perspective. For this reason, two types of diachronic data are included. The main body of data presented in this paper stems from a Modern English experimental study with British and American subjects. Apart from a synchronic analysis of the experimental data also an apparent-time approach is applied, which helps to track ongoing change-in-progress. Pursuing a more long-term diachronic perspective on genitive variation, the results of the Modern English experimental study are then, in a second step, compared with the results of a Late Middle/Early Modern English corpus analysis covering the period between 1400 and 1630 (cf. Rosenbach and Vezzosi 2000; Rosenbach, Stein and Vezzosi 2000). I will show how the *s*-genitive has systematically extended its range of application from Late Middle to Present-day English both in terms of compatible contexts and frequency. As a possible explanation for this development, I will finally propose a diachronic scenario of how iconicity and economy may have interacted leading to a greater preference of the *s*-genitive.

2. Some structural and methodological preliminaries

Before turning to the analysis proper some structural and methodological preliminaries are in order. In the following I will identify those cases in which there is in fact a real choice between the *s*-genitive and the *of*-genitive and in which the choice between these two constructions represents a proper instance of grammatical variation. I will begin by pointing out any relevant morphosyntactic differences, and then move on to the question in which contexts they can be matched in a quantitative analysis.

2.1. Morphosyntactic differences

The morphosyntactic differences between the *s*-genitive and the *of*-genitive can be summarized as follows (cf. table 1)

Table 1: Morphosyntactic differences between the *s*-genitive and the *of*-genitive

morphosyntactic differences	<i>s</i>-genitive (<i>the man's head</i>)	<i>of</i>-genitive (<i>the head of the man</i>)
relational marker	• POSS 's ◊ more synthetic	• preposition <i>of</i> ◊ more analytic
grammatical function of possessor	<ul style="list-style-type: none"> • determiner: <i>[the/a king]'s daughter</i> • modifier (I): <i>a [king's daughter]</i> 	<ul style="list-style-type: none"> • complement: <i>the daughter of the/a king</i> • modifier (I): <i>the daughter of a king</i> • modifier (II): <i>a king of honour</i>
word order	• possessor-possessum	• possessum-possessor

First, there are two different relational markers linking the two elements of a possessive construction, which I will call here ‘possessor’ and ‘possessum’: (1) the possessive ‘s in the *s*-genitive (today regarded as a clitic rather than the Old English inflectional case ending), and (2) the preposition *of* in the *of*-genitive. Therefore, the *s*-genitive can be regarded as more synthetic or more bound than the *of*-genitive. Second, the linear order of possessor and possessum is exactly complementary: while in the *s*-genitive the possessor precedes the possessum, it follows it in the *of*-genitive. And third, for both the *s*-genitive and the *of*-genitive the same surface form can encode various grammatical functions. In the example [*the king*]'s daughter the possessor functions as a determiner (e.g. Huddleston 1984: 233; Quirk *et al.* 1985: 326), while in the corresponding *of*-genitive (*the daughter of the king*) it is generally analysed as a complement (e.g. Huddleston 1984: 262). In both the *s*-genitive and the *of*-genitive the possessor can, however, also serve as a modifier (e.g. *a [king's daughter]/the daughter of a king*), specifying not the referent of the possessum but rather its denotational class, thereby answering the question ‘what type of daughter’ rather than ‘whose daughter’ it is (cf. Huddleston 1984: 258; Quirk *et al.* 1985: §5.122). There is yet a second type of modification occurring only with the *of*-genitive and never with the *s*-genitive, as in *a king of honour*, where the possessor describes a property of the possessum and where there is no corresponding prenominal nominal modifier (cf. also Huddleston 1984: 262).³

2.2. Delimiting the range of variation

2.2.1 Categorical versus choice contexts

Not every *s*-genitive can be expressed by an *of*-genitive, and vice versa. The identification – and subsequent exclusion - of those contexts in which there is no choice (= “categorical contexts”) is therefore a crucial precondition for any quantitative analysis comparing the frequency of the two genitive constructions.⁴

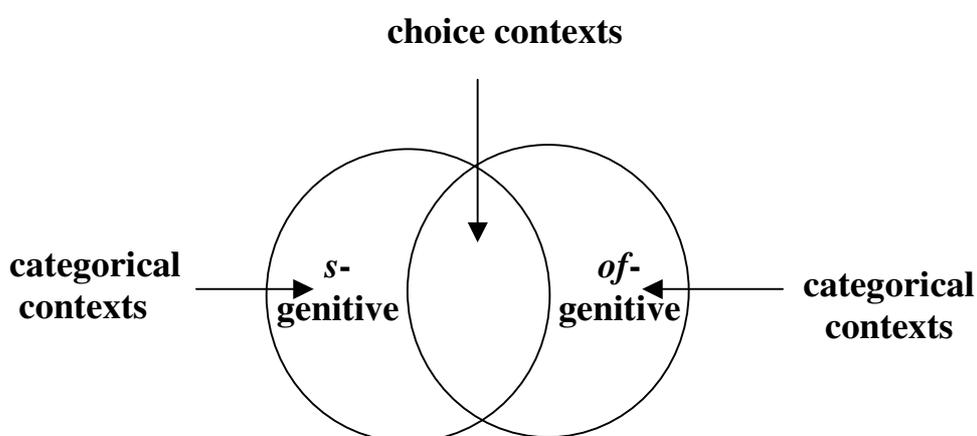


Figure 1: Categorical versus choice contexts

Table 2 gives a brief overview of those contexts which are at least in principle compatible with both genitive constructions (= “choice contexts”). Any other contexts will be excluded from consideration in this study.

Table 2: Choice contexts for genitive variation

choice contexts for genitive variation (<i>s</i>-genitive and <i>of</i>-genitive)	
genitive function/meaning	• possessive
noun class	• possessor = full lexical NP
definiteness	• whole genitive NP = [+definite] • no reference tracking devices for whole NP
grammatical function of possessor	• no modification (II)

First, pronominal possessors are usually realized as possessive pronouns and not by an *of*-genitive (*my house* vs. **the house of me*).⁵ Therefore, our analysis should focus on full-noun-phrase possessors only. Second, partitive genitives, such as *some of my students*, where the possessum narrows down the referent of the possessive NP, can only be realized by the *of*-genitive and never by the *s*-genitive. In principle, the analysis should therefore be restricted to possessive relations (in a broad sense; I will come back to this notion in §3.2. below).⁶ Third, since the possessor in the *s*-genitive already occupies the determiner slot rendering the whole possessive construction definite,⁷ only such possessive constructions may be compared in which the whole possessive construction is definite and where no other reference tracking devices are needed. Note, finally, that modification of the type as in *a king of honour* is, as mentioned above, a categorical context for the *of*-genitive only; a further restriction as to the grammatical function of the possessor will be made below.

2.2.2. Comparable versus non-comparable contexts within choice contexts

So far, it has been shown that a quantitative analysis of genitive variation as a case of grammatical variation should be restricted to choice contexts. In addition, bearing in mind that even within such choice contexts there probably can never be complete synonymy between two alternating constructions (a view expressed in the principle of isomorphism [Haiman 1985], or see also Bolinger [1977: 1]), there appear to be further factors which influence the likelihood of one construction or the other, which has the following implications for our empirical analysis: either we explicitly investigate those contexts as factors, or, otherwise, we need to keep their effects controlled. In the following I will briefly outline the factors which have been controlled for in this study; the factors investigated in this study, i.e. animacy, topicality and possessive relation, will be introduced and operationalised in §3 below.

Table 3: Comparable versus non-comparable contexts within choice contexts

factor	comparable contexts within choice contexts
grammatical function of possessor	<ul style="list-style-type: none"> • possessor = determiner (in <i>s</i>-genitive) • possessor = complement (in <i>of</i>-genitive)
phonological	<ul style="list-style-type: none"> • possessor not ending in /s/, /z/, /ʒ/
morphological	<ul style="list-style-type: none"> • singular possessor noun
syntactic	<ul style="list-style-type: none"> • non-complex, non-branching possessor and possessum • non-consecutive genitive constructions
socio-stylistic	<ul style="list-style-type: none"> • data must be either balanced or controlled for style

First, although modification in principle permits both constructions (*a driver's seat* versus *the seat of a driver*), there appear to be other potential adnominal variants here, i.e. a compound (*the driver seat*) or other prepositional constructions (*a seat for drivers/a driver*), which may obscure the quantitative analysis. In addition, there are genitive constructions, which – although they may be subject to similar restrictions as the *s*-genitive/*of*-genitive (cf. Biber *et al.* 1999: §4.6.10-4.6.14) – are not structurally equivalent to them, such as double genitives (*a friend of John's*) or elliptic genitives (*Let's meet at John's*). In this study I will therefore focus solely on determiner *s*-genitives and complement *of*-genitives, as outlined in table 1 above.

Second, possessors ending in /s/, /z/ or /th/ are not included in this study as it has been shown that the *s*-genitive is generally avoided in this phonetic environment, either resulting in the alternative *of*-genitive or a zero-genitive (*Jones' house*), cf. Altenberg (1982: §2.5); Quirk *et al.* (1985: §5.114). Likewise, plural possessors are not dealt with either. Besides the phonological property of regular plurals ending in {S} there seems to be also evidence pointing to a general avoidance of *s*-genitives with plural possessors even if not purely phonologically conditioned (i.e. with irregular plurals), cf. Jahr Sorheim (1980: 113).

Third, the choice of genitive construction seems to be sensitive to the branching direction and weight of the possessor and the possessum. While the *s*-genitive has been shown (cf. Altenberg 1982: §3; Jucker 1993: §5) to become increasingly infrequent with right-branching possessor nouns (e.g. *the man who lives next door's cat*),⁸ it is generally said to increase with a right-branching possessum noun. As is, however, shown by the frequency scores given in Biber *et al.* (1999: 304-305), the syntactic complexity of the possessor – apart from the branching direction involved – seems to play a crucial role as

well, with the *s*-genitive being still frequently used with simple premodification. It is only with increasingly complex possessors that the *s*-genitive becomes more and more unlikely to occur at all. In the present study, both the possessor and the possessum may therefore be premodified by one word; syntactically more complex constructions are excluded. Moreover, recursive genitive constructions (e.g. *Annie's husband's sister's trousers*), generally regarded as stylistically odd (cf. Zachrisson 1920; Quirk *et al.* 1985: §17.118), will not be considered here.⁹

Fourth, the *s*-genitive has also been shown to be highly sensitive to socio-stylistic factors, such as text type, formality and standard variety, with the *s*-genitive being more frequent in informal text types (cf. Altenberg 1982: §6; Jucker 1993: §7), particularly journalistic language (cf. Jahr Sorheim 1980: §3.5.2) and news (cf. Biber *et al.* 1999: 302), and it is used more frequently in American than in British English (cf. Jahr Sorheim 1980; Hundt 1998: §3.3). While the present experimental study is neutralised as to the factors of text type and formality by using text passages taken from novels sharing the same formal level in the questionnaire elicitation, I will address the question of which standard variety is the more 'progressive', British or American English, in the analysis in §4 below.

3. Iconic motivation for the choice of *s*-genitive: factors animacy, topicality and possessive relation

Previous empirical studies (cf. Jahr Sorheim 1980; Altenberg 1982; Jucker 1993; Leech, Francis and Xu 1994; Raab-Fischer 1995; Hundt 1998: §3.3) as well as grammars of English (Quirk *et al.* 1985: §§5.115-5.118, 17.45; Biber *et al.* 1999: §4.6.12) have already shown that animacy, topicality and the type of possessive relation play *some* role in the choice of genitive construction (see also Stefanowitsch, this volume). As is well known, these three factors often go hand in hand: only humans typically possess things and topics are usually animate (cf. Yamamoto 1999: 60-67); the correlation between animacy and topicality is so strong that in Taylor's (1996) cognitive account of the English *s*-genitive the effect of animacy is in fact subsumed under a superordinate concept of topicality. There is also cross-linguistic evidence for possessor-splits induced by animacy and topicality. That is, if a language has two constructions for expressing

possessive relations, it is both the animacy and the topicality of the possessor which determines which construction will be used, cf. Koptjevskaja-Tamm (2001, forthcoming) for presenting evidence for such possessor-splits from some European languages, and Stiebels (2000) for evidence from Guerrero-Nahuatl. In addition to showing that the effects of the individual factors can be separated from each other I shall also try to provide a possible explanation as to why it is the *s*-genitive that is favoured over the *of*-genitive with animate and topical possessors and with more prototypical possessive relations. For this reason, the three factors will be linked to iconic/natural principles, which allow us to predict why we should expect to find more *s*-genitives in some contexts than in others, and which may, possibly, also account for the diachronic development of the *s*-genitive, as I will argue in §5 below.

In this study I will refer to a more indirect notion of iconicity, proceeding from a resemblance between the *relation* of linguistic signs and their referents (i.e. a notion of diagrammatic iconicity) rather than a direct resemblance between the two,¹⁰ and assuming that it is the way language is conceptualised and processed rather than properties of the world itself that can determine linguistic structure.¹¹ In the latter sense iconicity as used in this study is closely tied to the notion of naturalness. In approaches to naturalness (cf. Dressler *et al.* 1987) it is generally assumed that language is to a large extent – although not exclusively so – determined by the way it is conceptualised and processed, and what is easier to process for the human brain is usually regarded as ‘more natural’. If we apply now such an understanding of iconicity/naturalness to grammatical variation, we may, very generally, predict that given two alternative constructions the more iconic/natural should be preferred.

In the following I will invoke two iconic/natural principles to predict the distribution of the *s*-genitive: (1) a word order principle, which will account for the complementary distribution of the possessor and the possessum in the *s*-genitive and the *of*-genitive due to the factors animacy and topicality, and (2) the principle of conceptual distance (cf. Haiman 1985), which, based on the different types of possessive relation holding between the possessor and the possessum, account for the different degree of bondedness between the *s*-genitive (= more bonded) and the *of*-genitive (= less bonded).

3.1. Serialisation of possessor and possessum: animacy and topicality

Animacy as used in this study refers to the distinction between a human possessor and a genuine inanimate possessor and is operationalised as illustrated in table 4 below.

Table 4: Animacy of possessor: operational definition

animacy of possessor: operational definition	
<p>[+animate] possessor</p> <ul style="list-style-type: none"> • [+ human], [-animal], [-collective] • no proper nouns <p style="text-align: center;">↓</p>	<p>[-animate] possessor</p> <ul style="list-style-type: none"> • [-human], [-collective] • no proper nouns • no geographical and temporal nouns <p style="text-align: center;">↓</p>
personal nouns only (e.g. <i>girl, mother, boy, man</i>)	concrete nouns only (e.g. <i>chair, bed, door</i>)

Among animate noun classes, proper nouns (*John*) stand out in being the most likely to occur with the *s*-genitive (cf. Jucker 1993: 126-127; Hundt 1998: 44-45; Biber *et al.* 1999: 302). Note, that proper nouns are - inherently - highly topical as well, which again shows to what extent animacy and topicality interact. While the *s*-genitive is said to tend not to occur with inanimate possessors (cf. Biber *et al.* 1999: 303), it has been reported to be quite common with certain inanimate noun classes, such as geographical nouns (*London's weather; the city's shops*) or temporal nouns (*today's weather*), cf. Jahr Sorheim 1980; Jucker 1993: 126-127; Hundt 1998: 44-45). Collective-noun possessors (e.g. *the committee's decision*) are still fairly common with the *s*-genitive, although this noun class, vacillating between an animate and an inanimate interpretation, resists a clear categorisation as to animacy. To avoid any specific lexical effect, I will therefore only regard common nouns, comparing personal (human) nouns with truly inanimate concrete nouns; these two noun classes have been shown to display the least propensity for taking the *s*-genitive in the animate, respectively the inanimate domain. Note that an exclusion of proper nouns/names (e.g. *John, London*) is essential for any analysis which tries to investigate the factors animacy and topicality *independently* from each other. Since such proper nouns/names are inherently topical, it would otherwise not be clear whether in cases such as *John's book* it is the high topicality of *John* which induces the *s*-genitive or the fact that it is a human possessor. Likewise, in *London's underground* we simply cannot tell whether the *s*-genitive is chosen because the possessor is a proper (geographical) name or because - or rather despite of the fact that - it is inanimate.¹²

With topicality I refer to the distinction between referentially given and new possessors.¹³ A [+topical] possessor was always a second-mention, definite expression (e.g. *the girl, his father, the chair*); a [-topical] possessor always a first-mention, indefinite expression (e.g. *a girl, one man, some composer*), as illustrated in table 5 below.

Table 5: Topicality of possessor: operational definition

topicality of possessor: operational definition	
[+topical] possessor <ul style="list-style-type: none"> • [+referential] • second mention • definite expression 	[-topical] possessor <ul style="list-style-type: none"> • [+referential] • first mention • indefinite expression

Having established an operational definition for the factors animacy and topicality, the question now is how a [+animate] and [+topical] possessor should influence its serial position within a possessive construction, and how this should be regarded as reflecting iconic/natural principles?

In psycholinguistic research it has been argued that concepts are processed and then serialised in the order in which they become available to the mind. In particular, animates and topics have been shown to be highly accessible and to occur early in utterances (cf. Bock and Irwin 1980; Bock and Warren 1985; Fenk-Oczlon 1983, 1989; Bock and Levelt 1994: 965-966; McDonald, Bock and Kelly 1993). Accordingly, a [+animate] and [+topical] possessor should occur early in a possessive construction, which is only possible in the *s*-genitive. Therefore, we can predict to find more *s*-genitives with [+animate] and [+topical] possessors, which can be taken to be iconic/natural since in this case linguistic serialisation reflects the order of processing, which in turn reflects the order of conceptualisation.

<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> [+animate] [+topical] possessor </div> <div style="margin-right: 10px;"> \ </div> <div style="margin-right: 10px;"> highly accessible </div> <div style="margin-right: 10px;"> \ </div> <div style="margin-right: 10px;"> early processing </div> <div style="margin-right: 10px;"> \ </div> <div style="margin-right: 10px;"> early serialisation </div> <div style="margin-right: 10px;"> \ </div> <div> <i>s</i>-genitive </div> </div>
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Note, however, that while there is compelling cross-linguistic evidence for animates to occur early in linear order (cf. Siewierska 1988: 56-60; Ortman 1988: 75-76; Yamamoto 1999: 52-56), and there seems to be good reason to assume that this word order preference is a cognitive universal (cf. Dahl and Fraurud 1996: 58; and see Haspelmath

1999b: 199 for discussing ANIM > INANIM as a constraint used in Optimality Theory) – provided a language allows for such a flexibility – , the preference for putting topics (i.e. given information) first, most probably is not. As is, for example, shown by Hawkins (1994: §4.4), the relative order of given and new information is sensitive to the branching direction of the language involved. While ‘given>new’ is typical of right-branching languages, such as English, ‘new>given’ seems to be more frequently found in left-branching languages, such as Japanese. This directly concerns the question to what extent it may be legitimate to stretch the notion of iconicity as to encompass matters of conceptualisation which may be language-specific.¹⁴ For the purpose of the present study, however, which investigates a word order choice in English, it will be sufficient to note that ‘given>new’ is a processing principle operating in the English language.

3.2 The principle of conceptual distance: possessive relations

The classification of the semantic relations holding between the possessor and the possessum is a notoriously difficult enterprise. The traditional taxonomies of the genitive functions (e.g. Quirk *et al.* 1985: §5.116; Biber *et al.* 1999: 303-304) are quite arbitrary and *ad hoc* and do not entail any predictions as to which functions the *s*-genitive should be expected to favour. Such predictions can, however, be derived from the typological work on possession, where a distinction is made between alienable and inalienable possession (cf. Nichols 1988), which, although not grammaticalised in English, may nonetheless well reflect preferences in the choice between the *s*-genitive and the *of*-genitive, i.e. may predict distributional frequency patterns. In this study I will regard kin terms and body parts, which are the most uncontroversial members of the inalienable class cross-linguistically (cf. Seiler 1983: 13; Nichols 1988: 572-573) and legal/permanent ownership, which ranks highest in Taylor’s (1989a, b) prototype account and in Heine’s (1997: 39-40) possession scale, as the most prototypical possessive relations for animate possessors, while abstract possession or states may be regarded as less prototypical instances of animate possession. Note, that these possessive relations (kin terms, body parts, legal ownership) have also recently been regarded by Koptjevskaja-Tamm (2001, forthcoming) as the prototypical members of possession. For inanimate possessors the situation is slightly complicated by the fact that the prototypical

possessor is by definition human (cf. Seiler 1983: 4; Taylor 1989a: 679). Nonetheless I will consider part/whole relations as prototypical instances of inanimate possession, since here the possessum forms an inseparable part of its possessor, while non-part/whole relations will be regarded as [-prototypical]; for an overview see table 6 below.

Table 6: Type of possessive relation: operational definition

type of possessive relation: operational definition			
[+animate] [+human]		[-animate]	
[+prototypical]	[-prototypical]	[+prototypical]	[-prototypical]
<ul style="list-style-type: none"> • body parts: <i>hand, eyes,...</i> • kin terms: <i>father, brother,...</i> • permanent/legal ownership: <i>car, house,...</i> 	<ul style="list-style-type: none"> • states: <i>exhaustion, pride, joy,...</i> • abstract possession: <i>future, career,...</i> 	<ul style="list-style-type: none"> • part/whole: <i>frame/chair; bonnet/car; door/building</i> 	<ul style="list-style-type: none"> • non-part/whole: <i>contents/bag; condition/car</i>

Based on the principle of conceptual distance as proposed by Haiman (1985) we can now link the type of possessive relation to the choice of genitive construction. According to this iconic principle which states that “the greater the formal distance between X and Y, the greater the conceptual distance between the notions they represent” (Haiman 1985: 106). That is, the *s*-genitive as the structurally more bonded, tighter construction should be more likely to occur with [+prototypical] possessive relations, representing a close connection between possessor and possessum, than with [-prototypical] relations, as illustrated in figure 2 below.

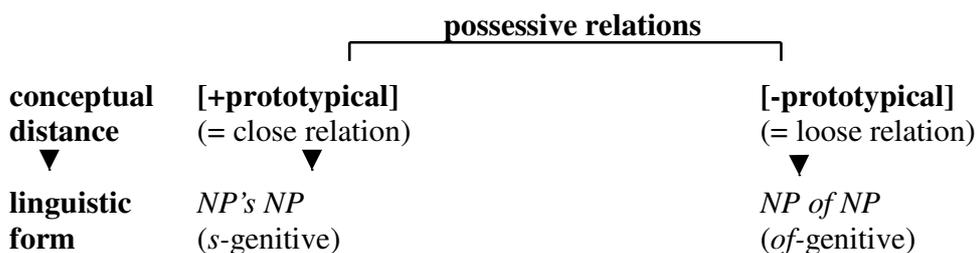


Figure 2: Possessive relation: predictions

4. Modern English: experimental study

To test the predictions for the factors animacy, topicality and possessive relation I conducted an experimental study with 56 British and 48 American native speakers,¹⁵ a

methodological tool, which has to my knowledge hitherto not been applied to the English genitive variation. Although an experimental study does probably not reflect actual performance in the same way as naturally occurring speech data, it seemed promising for the following reasons. First, given the multitude of factors involved, an experimental design allows the analyst to investigate the effect of the factors animacy, topicality and possessive relation solely, focusing on real choice contexts and controlling to the best of our knowledge all other factors known to bias the choice between the two genitive constructions. Second, given the interaction of the three factors, it allows us to keep their effects apart in the empirical analysis, thereby considering not only their interaction but also enabling us to evaluate their relative importance.

In the empirical analysis below, the following questions will be addressed.

1. I shall test whether the predictions derived from iconic/natural principles in §3 above are supported by the relevant evidence. To what extent is the *s*-genitive more frequently realised with a [+animate], [+topical] possessor in a [+prototypical] possessive relation?
2. The relative importance of the factors animacy, topicality and possessive relation will be assessed, i.e. the question of which factors turn out to be more important than others.
3. The results for (1) and (2) will be given both a diachronic and a varietal perspective. I shall investigate to what extent any change-in-progress phenomena can be discerned and whether there are any differences between British and American Standard English.

4.1. Procedure

Each subject was asked to fill in a questionnaire, which contained small text passages, adapted from novels, providing contexts for adnominal genitive constructions.¹⁶ The subjects had to choose as spontaneously as possible between the use of the *s*-genitive or the *of*-genitive in the given contexts. To prevent the subjects from being tempted into giving stereotype responses, the order in which the items were presented and the presentation of the genitive constructions was randomised. An example of what the task looked like is given in (1):

- (1) A helicopter waited on the nearby grass like a sleeping insect, its pilot standing outside with Marino. Whit, a perfect specimen of male fitness in a black flight suit, opened [*the helicopter's doors/the doors of the helicopter*] to help us board.
(adapted from: Patricia Cornwell [1994]. *The Body Farm*, p. 52)

4.2. Conditions and items

The three nominal variables tested resulted in eight conditions; in table 7 below these conditions are specified, illustrated by an example for each condition. There were at least 10 items per condition, altogether 93 items.

Table 7: Conditions and items (*±proto = ±prototypical)

[+animate]				[-animate]			
[+topical]		[-topical]		[+topical]		[-topical]	
[+proto]*	[-proto]	[+proto]	[-proto]	[+proto]	[-proto]	[+proto]	[-proto]
<i>the boy's eyes/</i> <i>the eyes of the boy</i>	<i>the mother's future/</i> <i>the future of the mother</i>	<i>a girl's face/</i> <i>the face of a girl</i>	<i>a woman's shadow/</i> <i>the shadow of a woman</i>	<i>the chair's frame/</i> <i>the frame of the chair</i>	<i>the bag's contents/</i> <i>the contents of the bag</i>	<i>a lorry's wheels/</i> <i>the wheels of a lorry</i>	<i>a car's fumes/</i> <i>the fumes of a car</i>

Testing all eight logically possible combinations of the factors animacy, topicality and possessive relation allows us to keep their effects apart in the empirical analysis, i.e. study these factors in isolation, and, in addition, make predictions as to the relative importance of these three factors. Note, that in table 7 the conditions are arranged in such a way as to stipulate animacy as the most important factor, followed by topicality and then possessive relation. If this ordering holds true we would expect to find the *s*-genitive decreasing in its relative frequency – and the *of*-genitive increasing – along this scale from left to right.

4.3. Analysis and results

In the following I will first present the results for the synchronic state of affairs and then, in a second step, look at possible change-in-progress phenomena, both separately for the British and the American subjects. Finally, the results for the two standard varieties will be compared, both synchronically and diachronically.

4.3.1 Synchronic state of affairs

Figure 3 below shows the relative frequency of the *s*-genitive and the *of*-genitive for the British subjects according to the eight conditions (and in the same ordering) as given in table 7 above.

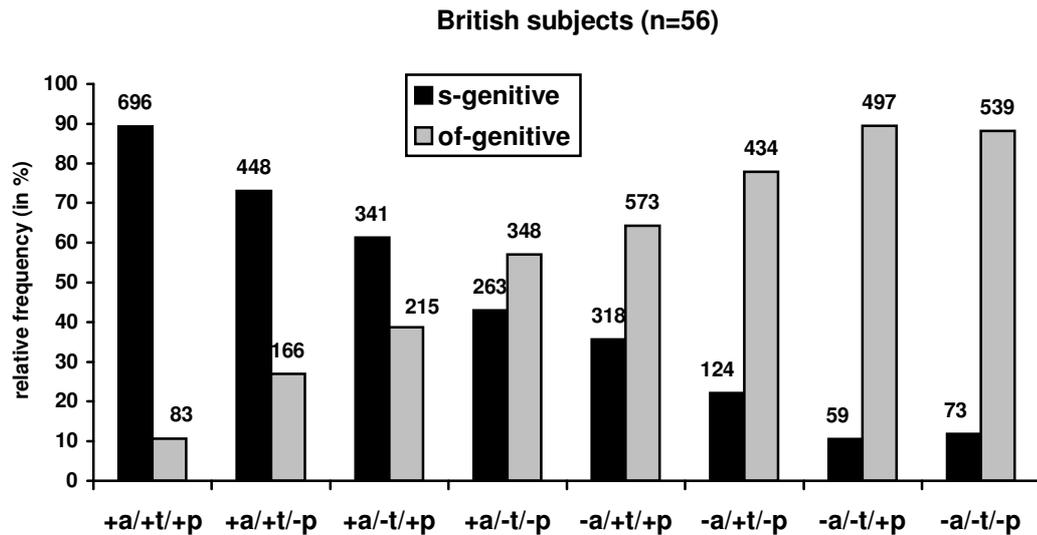


Figure 3: British subjects (n=56) – interaction of factors: relative frequency of the *s*-genitive versus the *of*-genitive according to the eight conditions ($\pm a = [\pm\text{animate}]$; $\pm t = [\pm\text{topical}]$; $\pm p = [\pm\text{prototypical}]$ possessive relation); token frequencies indicated above each column

Figure 3 shows that the relative frequency of the *s*-genitive decreases steadily from left to right; the differences between the single conditions are all statistically significant (at least chi-square, $p < 0.01$), except for the difference between the last two conditions.

As can be seen in figure 4 below, the picture is exactly the same for the American subjects, except that apart from the difference between the last two conditions, for the American subjects also the difference between the [+a/-t/-p] and [-a/+t/+p], i.e. the condition at the borderline between the [+animate] and the [-animate] conditions turns out to be not statistically significant.¹⁷

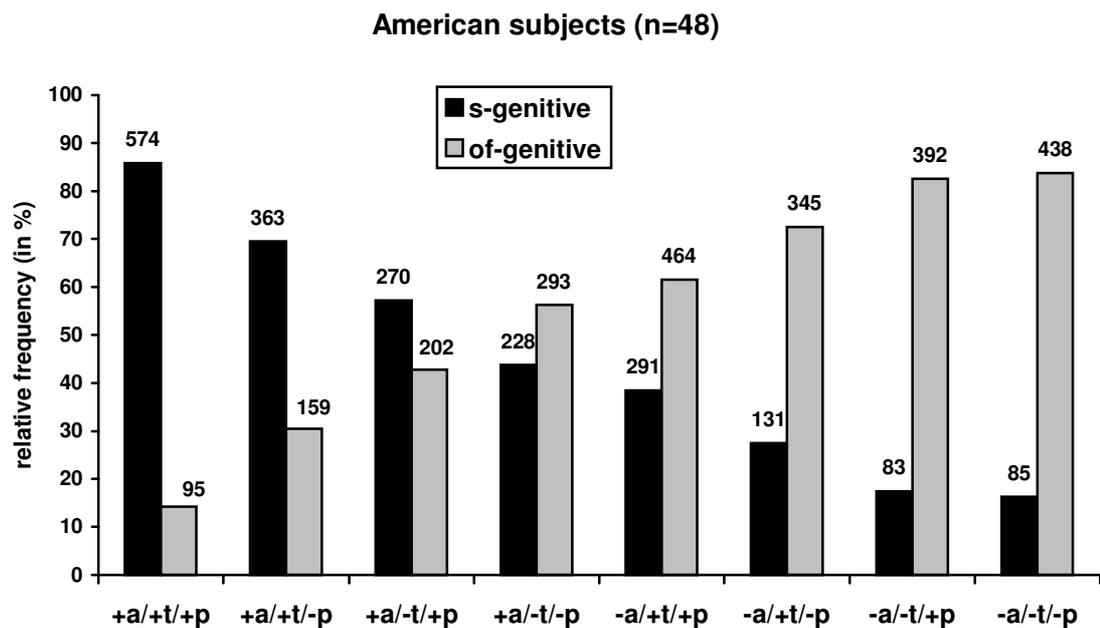


Figure 4: American subjects (n = 48 – interaction of factors: relative frequency of the *s*-genitive versus the *of*-genitive according to the eight conditions ($\pm a = [\pm \text{animate}]$; $\pm t = [\pm \text{topical}]$; $\pm p = [\pm \text{prototypical}]$ possessive relation; token frequencies indicated above each column

Therefore, for both the British and the American subjects the relative importance of the three factors is as indicated in table 7 above, i.e. animacy > topicality > possessive relation. Note, that it is not at all surprising to find most *s*-genitives in the [+a/+t/+p] condition, i.e. where all positive values of the factors are combined, as well as most *of*-genitives with the negative clustering of factor values in [-a/-t/-p]. Yet, by taking into account the interaction of factors, we can pinpoint the contexts in which the *s*-genitive is favoured over the *of*-genitive and vice versa. As is apparent from both the British and the

American data in figures 3 and 4, it is, for example, not just any [+animate] possessor that will favour the *s*-genitive; for a [-topical] possessor in a [-prototypical] possessive relation the *of*-genitive will become a more highly favoured choice.

4.3.2 Change-in-progress

In order to detect any potential changes-in-progress I adopted an apparent-time approach (cf. Labov 1972), dividing the subjects into an older subject group (age ≥ 40) and a younger one (age < 40), assuming that the language of the older subjects should be indicative of an older language state than the language of the younger ones.

Figure 5 illustrates the relative frequency of the *s*-genitive according to the two age groups for British English (for conditions, see again table 7).

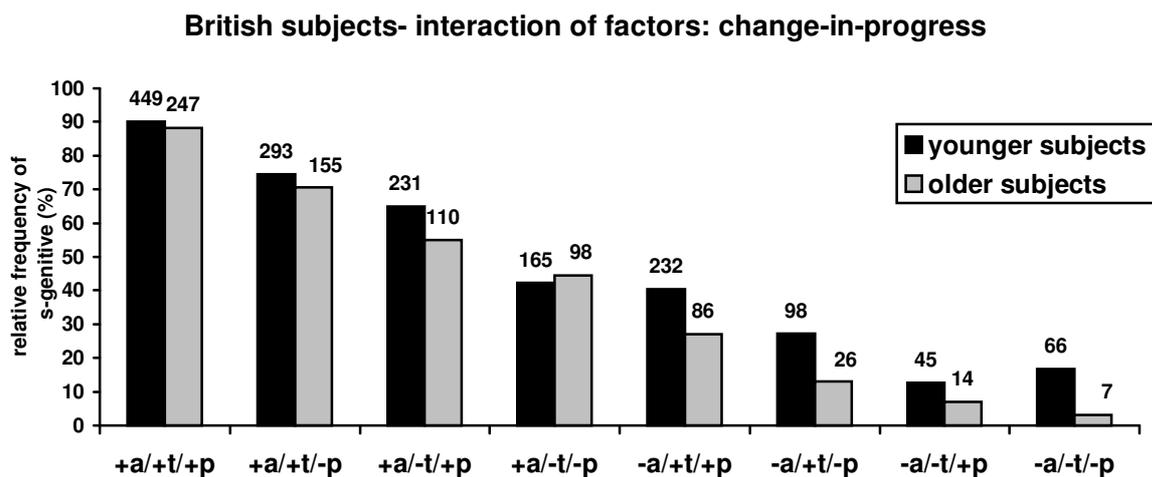


Figure 5: British subjects – interaction of factors: relative frequency of the *s*-genitive for the younger and the older subjects ($\pm a = [\pm\text{animate}]$; $\pm t = [\pm\text{topical}]$; $\pm p = [\pm\text{prototypical}]$ possessive relation); token frequencies indicated above each column

While both age groups apparently use the *s*-genitive according to the same hierarchy (again, the *s*-genitive decreases from left to right), there is a clear difference in the frequency of usage, with the younger subjects using significantly more *s*-genitives in the four [-animate] conditions (chi-square, $p < 0.001$).¹⁸

And again, the American subject groups show very similar results as can be seen in figure 6 below. Both age groups follow the same hierarchy (again, from left to right

there are fewer *s*-genitives), and again, the younger subjects use more *s*-genitives in the four [-animate] conditions, although for the American subjects the difference is not as pronounced as in the British data.¹⁹

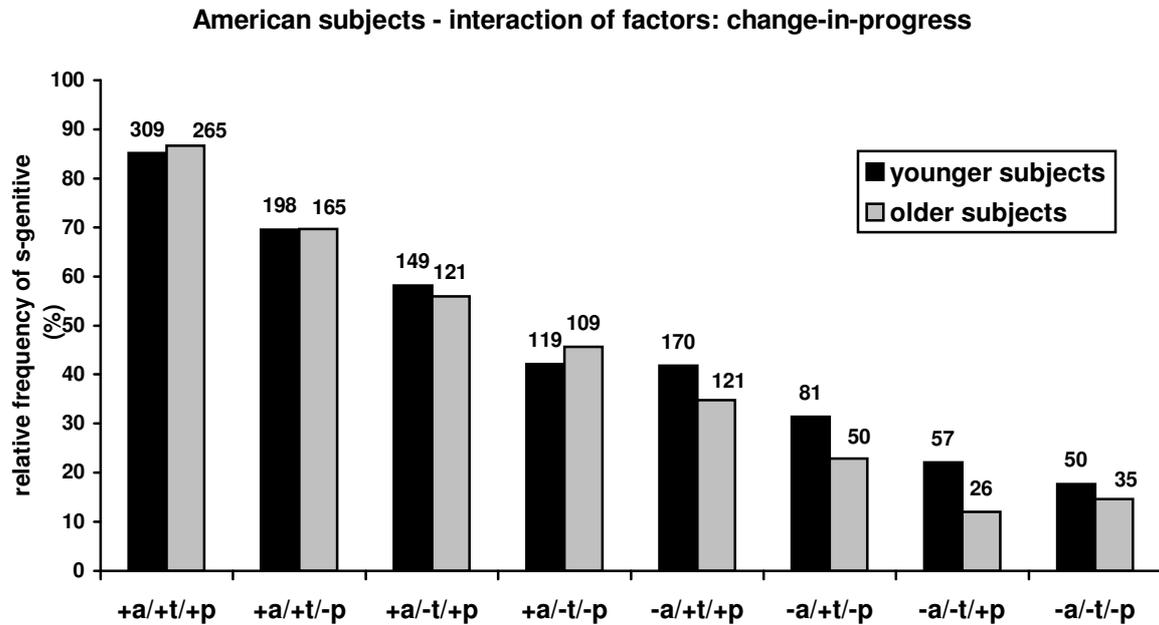


Figure 6: American subjects – interaction of factors: relative frequency of the *s*-genitive for the younger and the older subjects ($\pm a = [\pm\text{animate}]$; $\pm t = [\pm\text{topical}]$; $\pm p = [\pm\text{prototypical}]$ possessive relation), token frequencies indicated above columns

4.3.3 Comparing British and American English

So far, we have only looked at the distribution of the *s*-genitive, both synchronically and taking a short-term diachronic perspective, according to the factors animacy, topicality and possessive relation *within* British and *within* American English. In a next step let us now compare the British and American data. As a first approximation, figure 7 shows the relative frequency of the *s*-genitive according to the three factors for all British subjects as opposed to all American subjects.

British versus American subjects: single factors

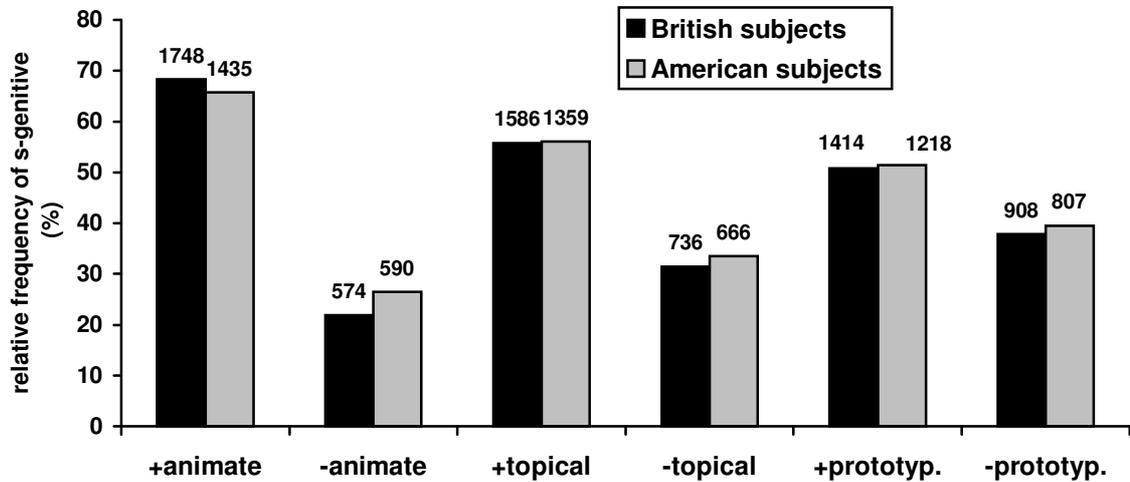


Figure 7: British versus American subjects: relative frequency of the *s*-genitive according to the factors animacy, topicality and possessive relation; token frequencies indicated above columns

It is, again, only the [-animate] conditions which are conspicuous in that the American subjects use the *s*-genitive significantly more often with [-animate] possessors (26.5%) than the British subjects (21.9%), (chi-square, $p < 0.001$).

It is certainly striking that for both the factors change-in-progress and standard variety the [-animate] conditions stand out in the analysis in that in these conditions the *s*-genitive is used more frequently by the younger subject groups and by American rather than British subjects. To evaluate the question which of these two factors is the more important one in this more frequent use of the *s*-genitive with [-animate] possessors (age, i.e. the diachronic factor, or standard variety?), in figure 8 the relative frequency of the *s*-genitive for all [-animate] conditions is summarized, specified for standard variety (British vs. American subjects) and age group (younger vs. older subjects).

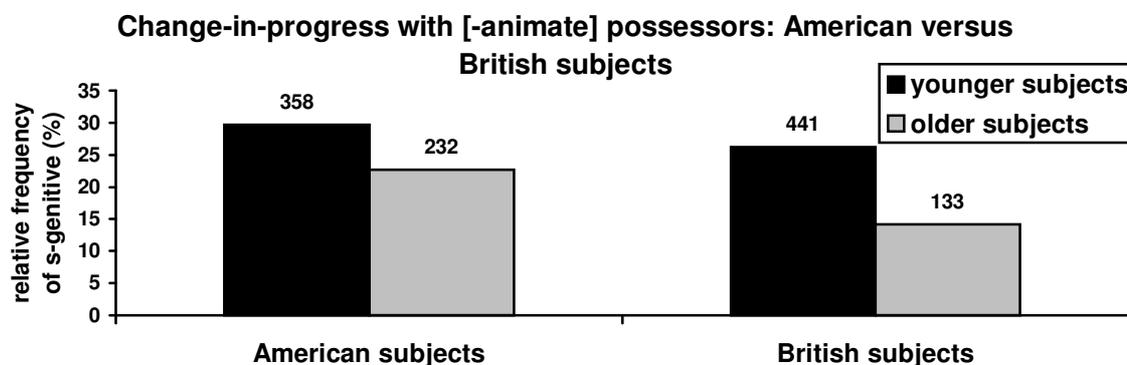
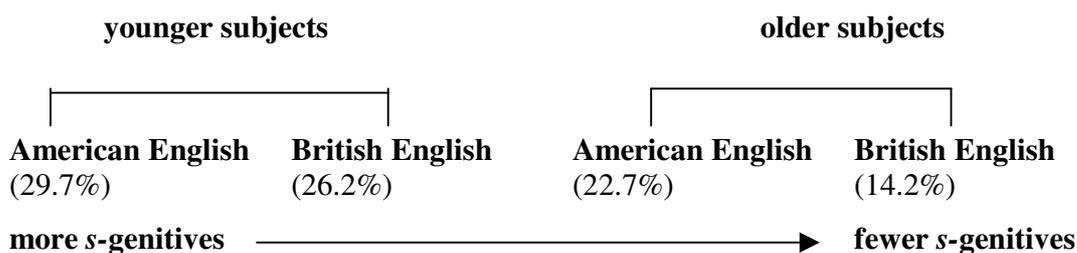


Figure 8: Change-in-progress (younger vs. older subjects) and standard variety (British vs. American subjects) for [-animate]: relative frequency of the *s*-genitive; token frequencies indicated above columns

As is apparent from figure 8, age seems to be a more important factor in the higher use of *s*-genitives with [-animate] possessors than standard variety. In general, more *s*-genitives with [-animate] possessors are used by the younger subjects than by the older subjects, and within the respective age groups it is standard variety as a secondary factor that determines the frequency of the *s*-genitive in that the American subjects turn out to be more advanced in the use of the *s*-genitive with inanimates for both the older and the younger subject group; this translates into the following ranking as illustrated below.²⁰



If we look at this even more closely and see how the *s*-genitive is distributed over the single [-animate] conditions in figure 9, it appears that the difference in the relative frequency of the *s*-genitive is not significant between the younger American and British subjects (except in the [-a/-t/+p] condition). For these two subject groups it only becomes significant as a cumulative effect when all [-animate] conditions are collapsed. It is,

however, significant between the older American and British subjects (at least chi-square, $p < 0.05$).²¹

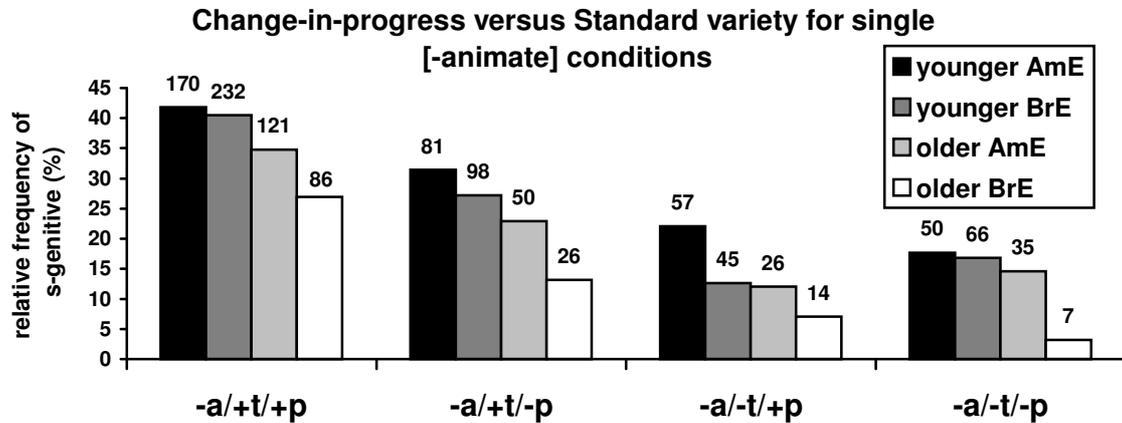


Figure 9: Change-in-progress vs. standard variety – interaction of factors in [-animate]: relative frequency of the *s*-genitive (-a = [-animate]; $\pm t$ = [\pm topical]; $\pm p$ = [\pm prototypical] possessive relation); token frequencies indicated above columns

This indicates that standard variety seems to have been more important in the past than it is in the present, confirming the view already expressed by Hundt (1998: 46) that the increasing use of the *s*-genitive with [-animate] possessors is a development that has spread from American to British English. As the data presented in this study, however, show, the difference between the two standard varieties seems now to be leveling out.

4.3.4 Summary

The data presented in this study, resulting from a questionnaire elicitation with British and American subjects show that the factors animacy, topicality and possessive relation determine the choice of genitive construction, confirming the predictions derived from iconic/natural principles in §3 in that the *s*-genitive is more frequently realised with a [+animate], [+topical] possessor in a [+prototypical] possessive relation. A look at how these three factors interact revealed the following relative ranking of factors: animacy > topicality > possessive relation. This proves to be a robust hierarchy which is unaffected by standard variety and change-in-progress. There was also evidence for ongoing change in the use of the *s*-genitive with [-animate] possessors. Although American English is still leading the trend towards an increased use of the *s*-genitive with [-animate] possessors,

the difference between the two standard varieties appears to be petering out in Present-day English. Note, finally, that the increasing use of the *s*-genitive with inanimate nouns has long been noted as a recent development in 20th-century English (cf. Zachrisson 1920: 39-49; Jespersen 1949: 327-328; Thomas 1953; Barber 1964: 132-134; Dahl 1971; Jahr Sorheim 1980; Raab-Fischer 1995; Denison 1998: 119; Hundt 1998). In all these studies this development is, however, described as being primarily confined to certain conspicuous inanimate noun classes, particularly geographical and temporal nouns. The present study provides additional evidence that this ongoing change towards an increasing use of the *s*-genitive with [-animate] possessors is not lexically restricted but in fact much more productive, by showing that the *s*-genitive has also become more frequent in an inanimate noun class hitherto assumed *not* to be participating in this change, i.e. concrete nouns.

5. The interplay of iconicity and economy in the long-term diachronic development of the English *s*-genitive

So far, choice of genitive construction has been exclusively motivated in terms of iconic/natural principles. In the following, I will argue that both the choice and the historical development of the *s*-genitive is not only driven by iconic but also by economical tendencies. To put the results of the present study into a more long-term diachronic perspective I will now refer to the results of a joint project on genitive variation in Late Middle/Early Modern English (cf. Rosenbach and Vezzosi 2000; Rosenbach, Stein and Vezzosi 2000). In these studies we have shown that the *s*-genitive, after a steady decline during the Middle English period, increases again in its relative frequency in the period between the 15th and the early 17th century. On the basis of this work, I argue in Rosenbach (2001, 2002) that the *s*-genitive has extended its range of applications along the following preference structure, which needs to be read as a kind of decision tree and which is simply another way of illustrating the hierarchical order of the factors animacy, topicality and possessive relation.

Table 8: Interplay of iconicity and economy in the diachronic extension of the *s*-genitive

	iconicity = economy		iconicity ≠ economy
	synchronically	diachronically	
	economical (I)	economical (II)	economical (III)
explanandum	most 'optimal' context for the <i>s</i> -genitive (early 15thc): [+animate] & [+topical] possessor in a [+prototypical] possessive relation	<i>s</i> -genitive becomes more frequent in 'optimal' context (15thc-early 17thc)	<i>s</i> -genitive extends to less and less optimal contexts (16 th c-PrdE): [-animate] & [-topical] possessor in a [-prototypical] possessive relation ◇ still ongoing extension with [-animate] possessors!
explanation: cognitive economy	<i>synchronic user-optimality</i>	<i>automatisation</i> (automatic processing) of cognitively most optimal and efficient context	<i>analogical/metaphorical extension</i> : same strategy becomes eventually applied to similar contexts

Synchronically, it is not only iconic but also highly economical for the human processing system to process and serialise concepts in the order in which they become available to the mind instead of storing them in a buffer and wait until they can be released. It is also economical to use the *s*-genitive as the shorter construction where this can be done, that is, with prototypical possessive relations (cf. also Rohdenburg's 1996 complexity principle). Note, that it is exactly in this synchronically most optimal context that the *s*-genitive begins to become productive again in the early 15th century.

While it is economical to choose the *s*-genitive in this most optimal context, it is even more economical to have this choice automatised over time.²⁴ As suggested above, the *s*-genitive was becoming more and more frequent in Early Modern English, eventually ousting the *of*-genitive as the preferred option in the [+animate] [+topical] [+prototypical] context, and today the *s*-genitive is almost obligatory in this context at a probability of almost 90% (see §4.3.1. above), unless, of course, other factors call for the *of*-genitive. This then constitutes a type of economy which in addition to being perfectly well compatible with iconicity already has a certain amount of diachrony built into it, in the sense that what is synchronically more optimal in performance will, diachronically, become more frequent.²⁵ Note, that these first two types of economy assign a different role to frequency. In the first case a higher frequency of the *s*-genitive is *motivated by an*

economical principle (i.e. synchronic user-optimality); in the second case this higher frequency – in turn, as a kind of snowball effect – *leads to* the increasing automatization of the *s*-genitive.²⁶

The extension of the *s*-genitive to less and less optimal contexts while no longer iconic, is economical in the sense that the same linguistic strategy is actually applied to similar contexts (a process also known as analogical, metaphorical extension).²⁷

Note, finally, that such a scenario of economically-driven language change towards the higher frequency of one genitive variant, i.e. the *s*-genitive, as such cannot really answer the question of *when* this change should have started, i.e. in itself it cannot account for why these economical forces should have become effective from the 15th century onwards. It is only when we connect the diachronic extension of the *s*-genitive with the structural change of possessive 's from an inflection to a clitic that the timing makes sense. First evidence for a clitic-like behaviour of the *s*-genitive as in the so-called ‘group genitive’, where the *-s*-suffix attaches to the whole NP, is attested for the late 14th century in Chaucer (e.g. [*The grete god of Love*]*s name*), but there seems to be a considerable period of transition until the 17th century, in which the *s*-genitive shows traces of both a fully-fledged inflection (as in ‘split constructions’, e.g. *the [king]*s* daughter of Ethiopia*) and of the newly evolving clitic (cf. Allen 1997; Rosenbach and Vezzosi 1999). The chronological correlation between the revival of the *s*-genitive on the one hand and the structural change of possessive 's from an inflection to a clitic on the other, is certainly more than striking to be mere chance, and we may speculate that it may have paved the way for the *s*-genitive to become more frequent.²⁸

6. Conclusion and outlook

In this paper I have investigated the English genitive variation as a case of grammatical variation, focussing on the effect of the factors animacy, topicality and possessive relation. Apart from showing that and how these factors influence the choice of genitive construction I also set out to weigh the effect of these factors, i.e. animacy > topicality > possessive relation. While so far in variation studies factors are usually weighed (if at all) by means of elaborate statistical procedures, such as logistic modelling (see e.g. Leech, Francis and Xu 1994; Arnold *et al.* 2000) or multivariate analysis (see e.g. Tagliamonte

2000, this volume), this study offers an alternative way of assessing the relative importance of several factors by (i) keeping their effects apart, and (ii) testing all logically possible combinations of factors in a controlled experimental setting. Linking the effects of the factors animacy, topicality and possessive relation to iconic/natural principles, I have, moreover, made a case for a speaker-based approach to grammatical variation, arguing that the choice of genitive construction is determined by the needs of speakers to place easily available information first in linear order and to encode more prototypical, inherent and therefore more predictable relations in the more bounded construction (i.e. the *s*-genitive). Defining both iconicity and economy in cognitive-psychological terms, I have shown how they interact leading to an increasing use of the *s*-genitive along the proposed preference structure from Late Middle English onwards. While iconicity and economy are usually regarded as two opposing forces, with the iconic mode gradually turning into the economic mode, an assumption underlying, for example, Haiman's (1994: 1634-1635) notion of 'routinization',²⁹ in the present argumentation they start off as two sides of the same coin; only diachronically and only for the process of analogical/metaphorical extension, what is economical becomes diametrically opposed to what is iconic. It is precisely such an antagonism that ensures that, overall, the English language has not become more economical or more optimal in the use of genitive constructions.

While the speaker-approach to grammatical variation advocated in the present paper is certainly an essentially functionalist position towards grammatical variation, it is worthwhile noting that very recently within the formal framework of Optimality Theory (OT) a novel way of analysing grammatical variation has been introduced, which is close in spirit to the analysis offered here (if, naturally, differing in the technical details of analysis). An evaluation of the relative importance of factors, or rather in OT terminology, a ranking of (violable) constraints, lies at the very heart of OT analysis in general. What is new in this recent *Functional Optimality Theoretic* (FOT) approach (see particularly Bresnan and Aissen 2002) for a programmatic sketch of this approach) is that it tries to reconcile both formal analysis and functional considerations by assuming OT constraints to have an underlying cognitive-functional motivation. That is, OT constraints as proposed in such functional OT accounts are based on iconic and economic principles,

similar to the account offered in this paper (for this, see e.g. Aissen 1999, 2000; Bresnan, Dingare and Manning 2001). In this respect it looks as if formal and functional approaches to grammatical variation, while always at odds with each other in the past, may – at least in principle, and to some extent – be reconcilable in the future.

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² For an in-depth treatment of the English genitive variation according to the factors animacy, topicality and possessive relation (and the data presented in this paper) as well as a more-detailed introduction of the particular type of speaker-based approach to grammatical variation and change as advocated in the present paper, I refer to Rosenbach (2002).

³ Prenominal modification in such cases would usually result in an adjective (*an honourable king*).

⁴ See, e.g., also Sankoff and Rousseau (1980: 12) for emphasizing that ‘knock-out’ factors need to be excluded beforehand.

⁵ But see Jucker (1993: 131) for giving an example where an alternative *of*-phrase can be used (*This could be the death of him*). As his corpus data show, however, such examples are extremely rare.

⁶ Also subjective (*John’s love*) and objective genitives (*John’s murder*), in which the possessum is a deverbal noun, are potential choice contexts. The present study focuses, however, on possessive meanings since it is not clear how such nominal valency relations should be treated in accounts of possession as introduced in §3.2. below.

⁷ This structural explanation is the traditional one (cf. Huddleston 1984: 233; Quirk *et al.* 1985: 326); for an alternative view which calls for a semantic-pragmatic motivation of article-possessor complementarity see Haspelmath 1999a.

⁸ Such right-branching possessor constructions are generally called ‘group genitives’. Although they are hardly attested in written language, they seem to be more common in dialectal and colloquial language (see

e.g. Carstairs 1987: 152; Jespersen 1918: 296-297). This calls into question any processing-based account for the alleged avoidance of the *s*-genitive with such right-branching and ‘weighty’ possessors. Note also, that it is exactly such group genitives, which have, diachronically, emerged in the English language as a new construction from the late 14th century onwards (cf. Janda 1980; Carstairs 1987; Allen 1997); for this see also §5 below.

⁹ Note, that such recursive genitives may also be avoided due to the *horror aequi* principle proposed by Rohdenburg (this volume).

¹⁰ For a discussion of different types of iconicity see e.g. McMahon (1994: 84-86) and Fischer and Nänny (1999).

¹¹ See also Dotter (1990: §4.4.2) for allowing an extension of ‘constructional iconicity’ as to encompass the way the language user perceives, processes and utilises concepts as to achieve the most efficient information flow.

¹² This study is restricted to [+human] possessors because animals are usually regarded to rank lower on animacy scales (cf. Silverstein 1976: 122; see also the gender scale given in Quirk *et al.* 1985: §5.104). For evidence that the *s*-genitive figures lowest with concrete nouns, see e.g. Jucker (1993: 126-127).

¹³ Note, that non-referentiality of the possessor results in a modifying genitive construction (e.g. *a bird's nest, women's clothes*), which, as argued in §2.2.2. above, is ruled out in the present study as a non-comparable context.

¹⁴ I am grateful to William Croft for drawing my attention to this.

¹⁵ The subjects were all monolingual speakers of English (in the sense of having acquired English as their one and only first language), all having an advanced educational background.

¹⁶ Note, that the provision of context was particularly important for the factor topicality which is not only defined in terms of definite vs. indefinite expressions, but also anaphorically, in terms of first- and second-mention.

¹⁷ The differences between all other conditions are significant with at least chi-square, $p < 0.001$.

¹⁸ In the [-a/-t/+p] condition the difference in the relative frequency between the two British age groups is not statistically significant, yielding, however, a strong tendency below the 0.10 level (chi-square, $p < 0.10$).

¹⁹ For the American subjects, it is only the difference in the [-a/-t/+p] condition that reaches any statistical significance (chi-square, $p < 0.01$); in the [-a/+t/+p] and the [-a/+t/-p] conditions still a relatively strong tendency can be observed (chi-square, $p < 0.10$).

²⁰ The difference in the relative frequency of the *s*-genitive vs. the of-genitive between the four subject groups are all statistically significant with at least chi-square, $p < 0.05$.

²¹ Again, it is the [-a/-t/+p] condition which does not fit in the otherwise neat picture; for the older subject groups the difference between the two standard varieties is not significant here.

²² Note, that the preference structure itself, i.e. the relative importance of the three factors, remains stable over time. What changes and varies is to what degree this preference structure is explored. This corresponds to the findings reported by Tagliamonte (this volume), who shows in a multifactorial analysis, weighing several factors, that the ranking of the tested factors remains the same, unaffected by variation between groups and over time, with only the locus on the scale varying for the different subject groups.

²³ Note, that this is not an altogether uncontroversial assumption. Some scholars see no reason at all to believe that biological systems in general and language in particular should be subject to considerations of economy (see e.g. Johnson and Lappin 1997: 328-329). ‘Cognitive economy’ is, however, an assumption implicit in many orientations of linguistics and cognitive science, as e.g. in Relevance Theory (Sperber and Wilson 1986), Fodor’s (1983) modularity hypothesis and Chomsky’s (1995) Minimalist Program to name just a few and illustrate how widespread it is.

²⁴ The distinction between ‘automatic’ and ‘controlled’ processing (cf. Schneider and Shiffrin 1977) is an assumption implicit in production frameworks such as Bock (1982) and Levelt (1989). While controlled processes are intentional, strategic devices, involving speakers’ consciousness and therefore drawing on working memory capacity, automatic processes are employed unintentionally, run very fast, do not need much capacity and are therefore an extremely economical processing mode.

²⁵ Note, that this is an assumption also underlying Hawkins’ (1994) Performance Grammar as well as the mechanism of diachronic adaptation recently proposed by Haspelmath (1999b). For a critical view on Haspelmath (1999b) see also the peer commentaries in *Zeitschrift für Sprachwissenschaft* 18 (2).

²⁶ On the role of frequency see also Krug (1997, this volume).

²⁷ See e.g. Ronneberger-Sibold (1980) for regarding analogy as an economical principle.

²⁸ For a more detailed account of the change of possessive 's towards a clitic (as well as a determiner) and how this links to the observed diachronic extension of the *s*-genitive, see Rosenbach (2002: §6.5). On the question of how this development is to be interpreted in terms of grammaticalization theory, see Rosenbach (2002: §7.6.3).

²⁹ But see also Fischer (1999) for arguing that “we are still always at the crossroads of both possibilities” (348), i.e. the iconic and the symbolic (i.e. economic) mode, and for showing that in the development of infinitival *to* in English indeed a kind of *Ikonsisierung* as described by Plank (1979) has taken place (cf. also Fischer 2000). Fischer (this volume) further explores this issue, elaborating on the relation between grammaticalisation and iconicity.