# Possession and Partition: The Two Genitives of English[*]
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## 0    Introduction

It is the aim of this paper[1] to investigate the semantics and the distribution of two constructions of English, both of which are traditionally considered to be genitives.

The first of these is the so-called *s*-genitive (or *possessive*), which consists of a nominal marked by the genitive suffix (the *modifier*), followed by another nominal which it modifies (the *head*): NP-*'s*-N. Together, these two nominals are generally considered to form another noun phrase (but the syntactic structure of the constructions will not concern us in this paper).

The second construction—referred to as *of*-genitive (or *of*–construction)—consists of a nominal (the *head*) followed by a prepositional phrase with *of* which modifies it (the NP in this prepositional phrase is the *modifier*): (Article)-N-*of*-NP. Together with an optional article, the nominal and the prepositional phrase are, again, considered to form a noun phrase.

Some typical instances of the *s*– and the *of*–genitive may serve to clarify exactly which aspects of the semantics and the distribution of these two constructions will be investigated in this paper. Examples of the *s*–genitive are shown in (3), examples of the *of*–genitive in (4):

(3)    the teacher's car, John's leg, Shakespeare's plays, Mary's intelligence, the children's arrival, the dean's appointment

(4)    a piece of apple pie, a dress of silk, the plays of Shakespeare, the beauty of the desert, the arrival of the children, the appointment of the dean

These examples demonstrate two things: First, each of the two constructions can encode a wide range of semantic relations: in the expressions in (3), the *s*–genitive encodes (in that order) *possession*, *body parts*, *authorship*, *attributes*, *someone performing an action*, and *someone affected by an action*; in the expressions in (4), the *of*–genitive encodes *partition*, *the material of which something consists*, *authorship*, *attributes*, *someone performing an action*, and *someone affected by an action*. This is just a fraction of the many relations which the two constructions can express. Second, the examples show that some semantic relations can be encoded by both constructions, while others can only be encoded by one of them. These facts pose two sets of questions which we will deal with in this paper:
–  Which semantic relations can be encoded by each of the two constructions; why are they all linked to the same forms; to what degree do the two sets overlap? These questions will be dealt with in Section 1.
–  In those cases where the same semantic relation can be encoded by both constructions, are they in free variation or are there factors determining the choice between them in a systematic fashion; if so, what are these factors? These questions will be dealt with in Section 2.

There is little agreement on most of these issues in the literature. This may in part be due to the fact that the investigations have been carried out in different frameworks with different aims, but it is even more likely to be a consequence of the fact that many of these investigations lack a firm empirical basis. In order to avoid this shortcoming, the present investigation is based on a corpus of 892 examples (455 *s*–genitives and 437 *of*–genitives) taken from approx. 30,000 words of spoken and written British and American English (the sources are given at the end of the References).

The data are analyzed within the framework of Cognitive Linguistics. More specifically, the analysis relies on concepts from Cognitive Grammar (cf. Langacker 1987), from prototype theory (cf., e.g., Rosch 1975), and from the conceptual theory of metaphor (cf. Lakoff & Johnson 1980, Lakoff 1987). Due to the need for brevity, these frameworks will not be discussed here, so some knowledge of them is presupposed.

# 1    The semantics of the two genitives

## 1.1    *Semantic relations expressible by the two genitives*

Anyone taking up the task of investigating the semantics of the *s*-genitive or the *of*-genitive will be discouraged by the conclusions of those who have tried before: In his *English Grammar*, Givón warns the reader that "the possessive or genitive grammatical case role typically encodes a grab–bag of relations" (Givón 1993: 264); the *Oxford English Dictionary* informs us that the current uses of the preposition *of* are "so weakened down as to be in themselves the expression of the vaguest and most intangible of relations" (Simpson and Weiner 1989: 711); Barbara Strang even goes so far as to claim that "any attempt to sum up 'the meaning' of the genitive is doomed" (Strang 1962: 93).

The reason for this wide-spread pessimism quickly becomes apparent, when we consider the fact that, given the right context, almost any relation between two entities can be encoded by the two genitives. Since it is thus impossible to come up with a taxonomy of the full range of semantic relations which can be expressed by the two constructions, we will confine ourselves to those semantic relations found in the corpus. They are summarized in Table 1 together with their relative frequencies.[2]

There seem to be four basic approaches to the problem of accounting for this wide range of semantic relations, all of which may be applied to the *s*–genitive, the *of*–genitive, or both constructions:

i.  Every single semantic relation is listed separately. In this approach, the fact that all these relations are linked to the same linguistic form is implicitly regarded as a case of homonymy—i.e., no explanation is given as to why all the different meanings can be expressed by the same form. This approach can be found in almost every traditional grammar (e.g. Quirk et al. 1991: 321f., 703).

ii. A general meaning is posited which covers all the relations that can be encoded by the construction. In order to cover all cases, this meaning must be highly abstract. It is usually some notion like *intimate relation* (Jespersen 1949: 311) or *intrinsic connection* (Jackendoff 1977: 13). Within the framework of cognitive linguistics, this approach has recently been taken by Langacker with respect to the *s*-genitive (1993) and the *of*-genitive (1992).

iii. It is claimed that the construction has no meaning at all, i.e., that it is capable of encoding any relation whatsoever. This approach has, for example, been taken by Kay and Zimmer (1976) and Kempson (1977) with respect to the *s*-genitive, and by Hudson (1984) with respect to the *of*-genitive.

iv. A basic meaning is posited, from which all other meanings can somehow be derived. In this case the genitive is regarded as a case of polysemy (in other words, all the different meanings are claimed to be related in some way). With respect to the *s*-genitive, this approach has recently been taken by Taylor (1989a,b) and Nikiforidou (1991), both of whom take *possession* to be its basic or central meaning. Nikiforidou links the other meanings to the basic meaning via metaphorical mappings, Taylor links them to the central sense via similarity.

Each of the first three approaches has certain shortcomings. The first approach must be criticized for its implicit assumption of homonymy, since this assumption fails to provide an explanation for two facts about the genitive construction: first, a similar set of semantic relations is often linked to a single morpheme in diachronically and typologically unrelated languages (e.g. Mandarin Chinese and Caucasian, cf. Nikiforidou 1991: 158), and second, some uses of the genitive are more productive and felt to be more central than others.

There are also serious objections to the second and the third approach: (i) since they either assign no meaning at all to the genitives or the same abstract meaning to both of them, they cannot explain why some semantic relations can only be expressed by one of the two constructions; (ii) they overgeneralize, i.e. they fail to delimit the set of semantic relations expressible by the two genitives in a way consistent with the data summarized in Table 1, and (iii) they fail to account for the fact that some uses of the genitive are more central than others.

Thus, the fourth approach seems to be the most promising one. Of course, it has yet to prove that it works for both genitives and that it can actually account for the full range of semantic relations. Both Taylor (1989a,b) and Nikiforidou (1991) deal exclusively with the *s*-genitive and they limit their accounts to a subset of the semantic relations shown in Table 1. On the condition that it can be shown to work, however, it offers more explanatory power than the

**Table 1**: The range of semantic relations expressible by one or both of the genitives, and their relative frequencies in the corpus.

| Semantic Relation | *s*-Genitive | *of*-genitive |
|---|---|---|
| Possessed–Possessor | 12.09%<br>e.g. *John's car* | — |
| Kinship relation | 11.43%<br>e.g. *John's brother* | 0.46%<br>e.g.*?? the brother of John* |
| Body Part–Person | 14.28%<br>e.g. *Mary's hands* | 1.37%<br>e.g.*?? the hand of Mary* |
| Soc./Prof. relation | 10.99%<br>e.g. *John's colleague* | 2.29%<br>e.g. *?? the boss of John* |
| Product–Producer | 7.91%<br>e.g. *John's latest book* | 0.69%<br>e.g. *the latest book of John* |
| Attribute–Holder of Attribute | 7.03%<br>e.g. *Mary's beauty* | 8.01%<br>e.g. *? the beauty of Mary* |
| Action–Agent | 18.46%<br>e.g. *Mary's arrival* | 4.35%<br>e.g. *the arrival of Mary* |
| Action–Patient | 1.54%<br>e.g. *John's appointment* | 7.78%<br>e.g. *the appointment of John* |
| Experience–Experiencer | 6.37%<br>e.g. *Mary's beliefs* | 1.37%<br>e.g. *the beliefs of Mary* |
| Location–Thing at Location | 4.83%<br>e.g. *John's village* | 4.12%<br>e.g. *the world of our ancestors* |
| Thing at Location–Location | 0.44%<br>e.g. *London's people* | 1.37%<br>e.g. *the people of London* |
| Effect–Cause | 0.88%<br>e.g. *the drug's effects* | 3.89%<br>e.g. *a result of the breakup* |
| Cause–Effect | 0.22%<br>e.g. *the disease's trigger* | 0.69%<br>e.g. *the source of stress* |
| Part–Whole | 1.54%<br>e.g. *the door's bolt* | 7.09%<br>e.g. *the bolt of the door* |
| Depiction–Depicted | 0.22%<br>e.g. *John's picture* | 5.95%<br>e.g. *the picture of John* |
| Originary–Origin | — | 2.06%<br>e.g. *the !Kung San of Africa* |
| Thing–Material | — | 5.26%<br>e.g. *a dress of silk* |
| Subclass–Class | — | 6.64%<br>*a type of wood* |
| Subpart–Whole<br>(incl. quantities) | — | 34.55%<br>e.g. *a piece of cake* |

first approach, in that it suggests a motivation for the fact that so many different relations are expressed by the same form. At the same time, it avoids the tendency of the second and the third approach to overgeneralize, in that it provides a principled way of constraining the range of semantic relations that can be expressed by the genitive. However, it remains to be seen whether it is possible to motivate *all* uses of the genitive by linking them to a central meaning. The polysemy approach will therefore be explored in more detail in the next two sections, where the proposals by Nikiforidou (1991), Taylor (1989a, b, 1996) and Langacker (1992) will be discussed and expanded upon.

## 1.2    *A polysemy approach to the* s–*genitive*

Although their accounts differ considerably, both Taylor (1989a, b) and Nikiforidou (1991) assume *possession* to be the basic meaning of the *s*–genitive. What arguments are there in favor of this assumption?

First, Taylor (1989a: 681) suggests that "the intuitions of the native speaker community" concerning the central status of the possessive meaning are "reflected in the name traditionally given to the construction ('the possessive')." In addition, Nikiforidou reports that native speakers tend to come up with examples of the Possessed/Possessor relationship "when asked to come up with an example of the genitive case" (1991: 159). Since this evidence is entirely anecdotal, however, it should not be valued too highly.

Second, in the literature on language acquisition the earliest uses of the *s*–genitive are reported to pertain to the Possessed/Possessor relation (cf. R. Brown 1973: 196).

Third, Taylor suggests that some uses of the *s*–genitive may only be interpreted in the possessive sense—for example, if there is contrastive stress on the modifier, as in *This isn't JOHN's car, it's MY car*, or in interrogatives, as in *Whose car were you driving?* (Taylor 1989a: 681). In addition, he observes that although one may refer to a car as *my car* without intending a possessive meaning (e.g., in the sense of 'the car I was driving'), one cannot do so when talking to its actual owner (ibid.). Such restrictions on non–possessive meanings are another strong argument in favor of the assumption that the possessive meaning is in some way basic.

Fourth, Nikiforidou (1991: 163) observes that the *s*–genitive used to have a much wider range of meanings in many Indo–European languages than is the case today, and that although many meanings were lost in the various languages, the possessive meaning was retained in all cases.

Finally, we can add a further strong argument to this list on the basis of the relative frequencies of the various relations shown in Table 1, although we must be careful to determine exactly how the frequencies bear on the issue at hand. Intuitively, it is plausible that the central sense should be the most frequent one. If we apply this assumption to the corpus, then *possession* does not appear to be the central sense: both Action/Agent and Body Part/Person are more frequent. However, frequency alone is not sufficient to determine prototypicality, since it has been observed that prototypicality does not necessarily correlate with frequency of use (cf. Taylor 1989b: 52f). Instead, we have to draw on the concept of *cue validity*, which is used in prototype theory to determine whether a particular attribute is typical for the members of a given category: an attribute is said to have a high cue validity for a category if a large number of the members of this category possess it, while at the same time it is possessed by few members of related categories. Applied to the semantic relations discussed above, we might say that a semantic relation has a high cue validity for the *s*–genitive if (i) many *s*–genitives in the corpus encode this relation, while (ii) it is encoded by as few expressions as possible from related categories (in this case, the *of*–genitive). The first of the two conditions is met by the Action/Agent relation, the Body Part/Person relation, the Product/Producer relation and the Possessed/Possessor relation, the Kinship and the Social and Professional relation, which each account for over ten percent of the corpus. As already mentioned, the Action/Agent relation is the prime candidate according to this criterion. However, of the relations in question only Possessed/Possessor, Kinship and Body Part/Person meet the second criterion (cf. Table 1). Here, the Possessed/Possessor relation clearly wins, since it is not encoded by the *of*–genitive at all. To conclude, Possessed/Possessor comes in third place with respect to the first criterion and in first place with respect to the second criterion. Since this is the best rating any of the relations achieves, it can be considered to have the highest cue validity. Therefore, we may plausibly assume Possessed/Possessor to be the central meaning of the *s*–genitive.

As already mentioned, Nikiforidou (1991) derives all other meanings from this central sense via metaphorical mappings. She does not define the notion of *possession* on the conceptual level. Instead, she makes her point by showing that "part of the vocabulary for possession can be used (and is often the only way) of [sic] talking about these other domains [i.e., the conceptual domains of the other semantic relations expressed by the *s*–genitive, A.S.]" (Nikiforidou 1991: 168). This she takes to be sufficient evidence for the existence of metaphorical mappings. Although a definition of the notion *possession* on the conceptual level would certainly add to the plausibility of such an account, her method seems solid enough as it is: there are lexical items which in their basic sense intuitively belong to the semantic domain of possession—words like *possess*, *own*, *offer*, *give*, *take*, *lose*, *rich*, *poor*, etc. If one can

demonstrate that these lexical items are used in talking about the semantic domains expressed by the other genitive meanings in "nongenitive contexts" (Nikiforidou 1991: 169) then this may be taken as independent linguistic evidence for the existence of metaphorical mappings. These mappings can then quite plausibly be assumed to underlie the extended uses of the genitive as well. Therefore, this paper will first explore Nikiforidou's approach, and return to the question of a conceptual definition of *possession* later. For every semantic relation encoded by the *s*–genitive, a conceptual metaphor will be suggested linking it—directly or indirectly—to the possessive meaning. Nikiforidou's mappings are used where this is possible (which is not the case for all semantic relations since she limits her account to those relations recognized by traditional grammarians). However, her examples are not used here, since they are made up and hence provide no real evidence for the existence of the mappings she postulates. Instead, the examples for her mappings as well as for the additional mappings postulated here are taken from the *Collins Cobuild Bank of English* (Collins Cobuild 1995) unless otherwise indicated.

There are various direct mappings from the possessive meaning to one of the other meanings expressed by the *s*–genitive. In each case the semantic relation is given together with the metaphorical mapping from the source domain of *possession* and some examples.

Consider (2):

(2)   Body Part/Person
      Metaphor:     BODY PARTS ARE POSSESSIONS
      Examples:     *a.*     When someone *loses* an arm or a leg in an accident...
                         *b.*     Maybe I am *losing* my mind

This extension accounts for the use of the *s*–genitive to refer to body parts in a narrow sense, as in *John's arm*, and in a wider sense, as in *my mind*. It seems to be a fairly strong link, since the use of *lose* is the most natural way of talking about an action or process which results in a missing body part (note that there are expressions like *donating blood* and *donating a kidney*, both of which provide additional evidence for the existence of this mapping).

Next, consider (3), which maps possession onto the domain of kinship relations, and (4) which does the same for the domain of social and professional relations:

(3)   Kinship relations
      Metaphor:     RELATIVES ARE POSSESSIONS (cf. Nikiforidou 1991: 184f.)
      Examples:     *a.*     Today he has *lost* everything, wife, fortune, freedom...
                         *b.*     You have to agree to *give* me a baby within a year

(4)   Social and Professional relations
      Metaphor:     ACQUAINTANCES/COLLEAGUES ARE POSSESSIONS
      Examples:     *a.*     [A]n atmosphere of tension in the workplace ... causes a firm to *lose* its best workers
                         *b.*     We had *lost* a good friend
                         *c.*     He *won* many friends and admirers

These mappings account for examples such as *Mary's brother*, *Mary's neighbor*, and *Mary's secretary*. They provide perfectly natural ways of talking about relationships.

This is also the case for the domain of attributes:

(5)   Attribute/Holder of Attribute
      Metaphor:     ATTRIBUTES ARE POSSESSIONS (cf. Nikiforidou 1991: 185)
      Examples:     *a.*     [The] living room had one of those toy chandeliers that *gave* it a motel lobby quality
                         *b.*     The editors of Vanity Fair have *lent* the dignity of a serious magazine to the satanic conspiracy theory
                         *c.*     He *possesses* the qualities required to win
                         *d.*     I know that this is the only way to restore much of Africa's *robbed* dignity

As (5) shows, a wide range of possessive terms is naturally applied to the domain of attributes and characteristics. This mapping accounts for such uses of the *s*–genitive as *John's strength* and *Mary's intelligence*.

Next, consider (6):

(6)     Product/Producer
  Metaphor:   PRODUCTS ARE POSSESSIONS OF THE PRODUCER
  Examples:   *a.*   He's *rich* in ideas (Lakoff & Johnson 1980: 48)
         *b.*   A real *treasure trove of ideas...*

In the case of physical products one can perhaps not actually talk about a metaphorical extension, since a product often belongs to the producer in the literal sense. Expressions such as *Mary's chair* (in the sense of 'the chair Mary built') can therefore be accounted for by the possessive meaning of the *s*–genitive. In the case of intellectual products, metaphors mapping the domain of possession onto the domain of intellectual activity have been described, for example, by Lakoff and Johnson (1980: 48). These metaphors account for expressions such as *Mary's ideas*.
  Next, consider the following examples:

(7)     Action/Agent
  Metaphor:   ACTIONS ARE POSSESSIONS
  Examples:   *a.*   They finally forced the police to *take* action.
         *b.*   ...the quantity of *invested* labor
         *c.*   They are free to *give* and receive help

(8)     Action/Patient
  Metaphor:   THINGS THAT HAPPEN TO US ARE OUR POSSESSIONS (Nikiforidou 1991: 168f)
  Examples:   *a.*   [They] *offer* reassurance to overseas investors
         *b.*   They are free to give and *receive* help (= (7c))

The examples in (7) and (8) show that we talk about actions as if they were possessions of either the agent or the patient. Example (7c), repeated with a different emphasis as (8b), shows that an action such as *helping* may even be talked about as a transaction of a possessed from the agent to the patient.[3] These mappings account for expressions like *John's application* (in the sense of 'John applies') and *John's acceptance* ('Somebody accepts John').
  As (9) shows, an experiencer may be talked about as the possessor of an experience:

(9)     Experience/Experiencer
  Metaphor:   EXPERIENCERS ARE POSSESSORS OF THE EXPERIENCE (Nikiforidou 1991: 177)
  Examples:   *a.*   [We] have to look a the experiences he *gained* at Liverpool and Hamburg
         *b.*   I'll *lose* all memory of the heat
         *c.*   Whites sold freedmen liquor to *rob* them of their sense and feelings of humanity

This mapping accounts for expressions like *Mary's feelings*.
  The mappings discussed so far all provide very strong links between the source domain of possession and the various target domains: in each case, a variety of possessive expressions can be used to talk about the target domain, and they provide a natural way of talking about it. In other words, there is nothing unusual about the metaphorical use of the expressions.
  Next, consider (10):

(10)     Part/Whole
  Metaphor:   PARTS ARE POSSESSIONS
  Example:   Although this branch looks as if it is part of this tree, it actually *belongs* to that one over there (Nikiforidou 1991: 170)

In this case, the example given as evidence for the mapping sounds rather constructed: no similar example is found in the *Bank of English*. The fact that there do not seem to be many good examples for this metaphor may point to the possibility that the metaphorical link is not as strong as it is for the metaphors in (2) to (9), which may be one of the reasons for the relative infrequency of this semantic relation in the corpus of *s*–genitives.[4]
  This is even more plausible in the case of some semantic relations which may be expressed by the *s*–genitive, but which do not seem to be directly linked to the domain of possession at all. First, consider the Cause/Effect relation. There appear to be no metaphors mapping the domain of possession onto the domain of effects and causes. Instead, the relation is linked to the central sense via the Product/Producer meaning:

(11) Effect/Cause
     Metaphor:      EFFECTS ARE PRODUCTS
     Examples:      *a.*      Some forms are painted with black and white lines to *create* an optical effect
                                 *b.*      Other drugs [...] will not *produce* the same effect

The fact that the Effect/Cause relation is linked to the central sense only indirectly may be one of the reasons why this relation is so infrequent in the corpus.

The reversal of this relation, the Cause/Effect meaning, may be linked to the central sense via an extension of the Kinship meaning to the domain of plants: there is some evidence for a mapping along the lines of EVENTS ARE OFFSPRING in *Roget's Thesaurus* (Roget 1972: 30), which lists *offspring*, *outgrowth*, *fruit*, *crop* and *blossom* as synonyms for *effect*, and *grow from*, *bud from*, *sprout from*, and *germinate from* as synonyms for *be the effect of*. Unfortunately, the *Bank of English* does not seem to contain examples of this metaphor, which makes it difficult to decide how productive it is. It may therefore be the case that, at least synchronically, the Cause/Effect relation is not linked to the central sense at all.

This is almost certainly the case for the remaining three relations encoded by the *s*–genitive: Thing at Location/Location, Location/Thing at Location, and Depiction/Depicted are apparently not linked to the central sense via conceptual metaphors. Note that the conceptual theory of metaphor offers a natural explanation for this fact in the case of the relations involving locations: since it is the function of conceptual metaphors to make more abstract concepts understandable in terms of less abstract ones, the direction of conceptual mappings is usually from the more concrete to the more abstract. However, the metaphors needed to link the Thing at Location/Location relation and the Location/Thing at Location relation to the central sense would have to take the opposite direction: from the domain of possession to the most concrete domain there is—the spatial domain.

The fact that there is no metaphorical link between these relations and the central sense does not necessarily mean that they are not linked to the central sense at all. Consider the following examples:

(12)  *a.*      That was the old family burying ground. That *belonged to* the plantation
       *b.*      The Duke of Northumberland *robbed* the country of one of the finest shots in the land

These example seem to suggest that locations can be conceptualized as possessors after all: in (12a) a plantation is presented as the possessor of a burying ground, in (12b) a country is presented as the possessor of one (or several) fine shots. But in fact these examples are better analyzed as metonymic: in (12a) *plantation* stands for *the owners of the plantation* via the metonymy INSTITUTION FOR THE PEOPLE RESPONSIBLE (cf. Lakoff and Johnson 1980: 38) and in (12b) *country* stands for *the people living in that country* via the metonymy THE COUNTRY STANDS FOR ITS CITIZENS. Thus, although a location cannot be a possessor, it may metonymically stand for one or several persons, which *can* be possessors. These or similar metonymies may provide the link to the central sense for many of the examples involving the Thing at Location/Location relation.

In the case of the Location/Thing at Location relation the link to the central sense may be provided by the knowledge that locations can be possessions in the literal sense: at least in capitalist societies, land can be owned, bought, and sold just like any other commodity.

Finally, although the Depiction/Depicted meaning is not linked to the central sense, it is linked to the Location/Thing at Location meaning:

(13) Depiction/Depicted
     Metaphor:      A DEPICTION IS THE LOCATION OF THE DEPICTED
     Examples:      *a.*      The teams find all this information [and] *put* it *on* microfilm
                                 *b.*      He was generating the kind of chemistry Truffaut wanted to *capture on* film
                                 *c.*      [He] does not appear *in* the story

Note that the last three meanings discussed are very infrequent in the corpus, which is to be expected if they are linked to the central sense indirectly or not at all. If they are not linked to the central sense, the question remains, why they can be expressed by the *s*–genitive. We will return to this question in Section 1.5.

To sum up, it seems to be possible to relate all frequently occurring semantic relations expressed by the *s*–genitive to the Possessed/Possessor relation via metaphorical mappings. Although more detailed studies using larger corpora would be needed to confirm this claim, the strength and the directness of the mappings seem to correlate with the frequency of the relations (we will return to this issue in Section 2.2). If this is the case, a polysemy approach based on metaphorical extensions from a central sense seems to be able to account for the wide variety of relations encoded by the *s*–genitive, while at the same time offering an explanation as to why some senses are more central than others.

We will now return to the account of the *s*–genitive by Taylor (1989a,b). Like Nikiforidou (1991), Taylor starts from the assumption that the *s*–genitive, "in its central sense, identifies one entity, the 'possessed', with reference to its possession by another, the 'possessor'" (1989b: 202). He then goes on to note that possession is not a semantically primitive concept, but is instead defined with respect to a cognitive model along the following lines:

(15)    There is a relation between (i) a possessor, which is a "specific human being," and (ii) a possessed, which is a "specific concrete thing." The relation is such that (iii) "for each thing possessed there is only one possessor." The possessor (iv) has "the right to make use of the possessed," which (v) is "invested in him in virtue of a transaction." The possessor (vi) is also "responsible for the possessed, he is expected ... to maintain it in good condition." In order for this to be possible, (vii) "possessor and possessed need to be in close spatial proximity," and (viii) "the relation ... is a long term one" (Taylor 1989a: 202).

When all of these conditions are met, the result is a prototypical possessive relationship. Using this kind of model certain other meanings of the genitive can be explained by the fact that they describe relations that, although in some way deviant from the prototype, are still close enough to warrant the extension (Taylor 1989b: 203):

(16)   *a.*    the secretary's typewriter ('the typewriter the secretary regularly uses')
       *b.*    John's train ('the train that he is traveling on')
       *c.*    John's wife ('the woman he is married to')

In (16a) the situation is very close to the prototype, only diverging from it in that the right to use the possessed is limited (ibid.: 203f). In (16b) the right to use the possessed is also limited as well as non–exclusive. In contrast to this, it is precisely the exclusiveness of the relation which is in focus in (16c) (ibid.). Taylor's approach can also be used to cover some meanings of the *s*–genitive which are still further away from the prototype, such as the partitive genitive, although, as Taylor admits, his approach cannot cover all cases: "it has to be admitted that for many possessive expressions [i.e., *s*–genitives, A.S.] the affinity of the evoked relation with the prototype would seem ... to be extremely tenuous. Especially problematic are those possessive expressions whose head is a deverbal or other relational nominal" (Taylor 1989a: 681). Taylor offers no explanation for the existence of such *s*–genitives (i.e., the ones described here as Action/Agent, Action/Patient and Experience/Experiencer) within his prototype account. Instead, he explains their existence by reference to the discourse function of the *s*–genitive, which he takes to be the identification of "an entity by invoking a relation exclusive to that entity" (ibid.: 683). Note, at this point, that the relations in question are quite easily accommodated by the metaphor analysis.

The prototype account and the metaphor account are not incompatible: the similarity between two entities or events A and B, as captured in Taylor's model, is, after all, one precondition for the metaphorical extension of A to B, as captured in Nikiforidou's (1991) approach. In fact, conceptual metaphors of the type suggested above may actually be viewed as 'prefabricated' comparison procedures within a prototype model—as guidelines which speakers and hearers use in order to determine similarities between the prototype and less prototypical members of the category. If we take this approach further, we might even say that some conceptual metaphors *create* similarities—that they tell the speakers and hearers of a language to look for similarities which may otherwise go unnoticed. On the other hand, the existence of a complex prototype allows the creation of new conceptual metaphors on the basis of perceived similarities. Thus, the two approaches may actually be complementary—a fact which is not explicitly appreciated by either Taylor or Nikiforidou.

## 1.3    *A polysemy approach to the* of–*genitive*

As already mentioned, a detailed polysemy account of the *of*–genitive is missing in the literature. This section will provide such an account on the basis of the principles discussed in the preceding section and the few scattered suggestions that can be found in the literature.

We will begin with the issue of what the central sense of the *of*–genitive might be. Obviously, it cannot be possession, since the corpus analysis clearly shows that, as a rule, the Possessed/Possessor relation cannot be encoded by the *of*–genitive. What do the data from the corpus suggest instead? If the criterion of cue validity is applied to the *of*–genitive in the same way in which it was applied to the *s*–genitive above, the following results emerge: first, the relation encoded most frequently by the *of*–genitive is the Subpart/Whole relation—it occurs four times more often than the next frequent relation (cf. Table 1), and second, the Subpart/Whole relation is among the relations least frequently encoded by alternative constructions—it cannot be encoded by the *s*–genitive at all (cf. Table 1). Consequently, the Subpart/Whole relation is clearly the most plausible candidate for the central sense of the *of*–genitive. This result of the corpus analysis is supported by Langacker's (1992) analysis, which, although ultimately aimed at an abstractionist account, suggests that prototypically *of* designates "an inherent–and–restricted–subpart relationship" (ibid.: 487) between the head and the modifier. Langacker bases his claim on the following phenomenon:

(17) *a.*          {all / most / some / many / seven} of the peas
      *b.*          {all / *most / *some / *many / *seven} the peas (ibid.: 485)

While (17a) shows that all the quantifiers in this example can occur before a PP headed by *of*, (17b) shows that *all* is the only one which can also occur directly before an NP. Langacker argues that this distribution is expected if *of* is assumed to have a *restricted subpart* meaning: under this assumption, *all* is the limiting case of a Subpart/Whole relation, namely the one where the subpart coincides with the whole. In other words, since the case where the part and the whole coincide is not necessarily construed as a Subpart/Whole relation at all, it is quite natural that the element denoting the Subpart/Whole relation (namely *of*) should be optional in this case but not in any of the other cases.

We will start out, then, by assuming that Subpart/Whole is indeed the central sense of the *of*–genitive. In this case it should be possible to relate all other senses to this central sense by mappings similar to the ones proposed for the *s*–genitive above.

Before possible links between the Subpart/Whole meaning and other semantic relations encoded by the *of*–genitive are explored, it is necessary to return briefly to a characterization of the Subpart/Whole relation. Note that in Table 1 a Subpart/Whole relation underlying such examples as *a piece of cake* is distinguished from the Part/Whole relation underlying examples like *the bolt of the door*. The Subpart/Whole relation can be characterized along the following lines:

(18)       There is a relation between parts and their whole, such that the parts are (i) neither clearly delineated, (ii) nor independent of the whole. They may (iii) constitute some part of an entity that is in no way different from the rest of it; in fact, they may (iv) become a part only because someone separates them from the entity, having no independent existence before the act of separation.

This is the relation underlying the *of*–genitives classified as Subpart/Whole in Table 1, as well as the expressions involving quantifiers in (17) which are used by Langacker (1992) as evidence for the central meaning of *of*. It is distinct from the Part/Whole relation, where the parts are conceptualized as having an independent existence as parts of the whole: they can be recognized as parts without prior separation, and they usually have some unique function (the Part/Whole relation is closely related to the Body Part/Person relation in this sense). However, although the notions of Subpart and Part as defined in this paper are distinct from each other, they are nevertheless related. More specifically, there is a kind of hierarchic relationship between them, in that the Part/Whole relation can be conceptualized as a special case of the Subpart/Whole relation, but not vice versa: the distinctiveness of parts may disappear, when we focus on the whole or when we conceptualize the parts as having lost their function. This makes it possible to perceive of them as subparts. Consider the following (constructed) statements:

(19) *a.*          The police found parts of the body
      *b.*          The police found pieces of the body
Example (19a) suggests that the police found body parts (which are functionally

differentiated)—say, an arm, a leg, or a head. At first reading, example (19b) suggests that the police found pieces of the body which could not be identified as specific body parts; but the possibility that they found body parts is not excluded, if we focus on the fact that the body parts have lost their functions.

Let us now explore the links between the (Sub)part/Whole meaning and the other relations encoded by the *of*–genitive. As will become clear presently, an account on the basis of Subpart/Whole as a central sense quickly runs into difficulties; the assumption concerning the central sense must be refined in order to accommodate all semantic relations. However, we will first discuss the cases which are unproblematic. The method used will be the same one used in the preceding section: In each case the semantic relation will be given together with the metaphorical mapping from the source domain of *partition* and some examples. Again, the examples are from the *Bank of English* (Collins Cobuild 1995) unless otherwise indicated.

Consider example (20):

(20)  Attribute/Holder of Attribute
      Metaphor:        ATTRIBUTES ARE PARTS
      Examples:    *a.*    Everything in my mirror—good, bad, or indifferent—is an essential *part* of me
                   *b.*    He was *part*–Jewish

This mapping accounts for examples such as *the beauty of the woman*. It seems to be quite natural to talk of attributes as *parts*, which is expected since the Attribute/Holder of Attribute relation is the second most frequent relation encoded by the *of*–genitive.

Next, consider (21)

(21)  Experience/Experiencer
      Metaphor:        EXPERIENCES ARE PARTS (OF THE EXPERIENCER)
      Example:        [T]he feelings and needs one experiences are a *part* of one's self

Again, the example seems fairly normal, which is surprising, since the relation is very infrequent in the corpus. Obviously, some other factor plays a role here. We will return to this question in the next chapter.

Next, consider (22):

(22)  Kinship, Social and Professional relations
      *a.*    Metaphor: SOCIAL GROUPS ARE WHOLES, THEIR MEMBERS ARE PARTS
              Example:  ...when Gates is no longer *part* of the company
      *b.*    Metaphor: A LOVED PERSON IS A PART
              Example:  [S]he couldn't be a *part* of him

Here, example (22a) shows that members of a social group or institution are easily conceptualized as parts. Example (22b) seems to be a much more special case: a lover might feel that his or her beloved one is a part of him or her in a moment of great emotional intensity, but it is certainly not the usual way of conceptualizing an interpersonal relationship. And, indeed, the large majority of the *of*–genitives in the corpus referring to kinship, social, and professional relations involve the relation between a group and an individual.

Next, consider the Subclass or Member/Class relation:

(23)  Subclass or Member/Class
      Metaphor:        A SUBCATEGORY IS A PART OF ITS SUPERORDINATE CATEGORY
      Example:        These two modes of decomposition reflect two general forms of organization of knowledge, taxonomic—that is, *subdivision into kinds*, and partonomic—that is, subdivision into parts ... (Tversky 1989: 334, emphasis added.)

Granted that the term *subdivision* refers to part/whole relations—*to subdivide* is defined as "to divide (something that is already divided) into smaller *parts*" (Summers 1987: 1053, emphasis added)—the quote in (23), taken from a paper on the difference between taxonomic and partonomic relations can be seen as an example of the metaphor in (23), since the term is quite clearly applied to the taxonomic relation (Of course, this is not to say that Tversky (1989) confuses the two kinds of relation—on the contrary, she offers a clear discussion of how they are distinguished on the conceptual level).

Next, consider the Thing/Constituent Material relation. This category covers those cases

where the head encodes some entity which consists of the material encoded by the modifier. Since the material is typically unlimited and the referent of the head only uses a certain quantity of the material, the relationship between the two is naturally understood as a Subpart/Whole relation. However, there seem to be quite a few examples which in addition point to a link between Thing/Constituent Material and a different relation, namely the one shown in (24):

(24)  Thing/Constituent Material
      Metaphor:       THE CONSTITUENT MATERIAL IS THE ORIGIN (OF THE THING CONSTITUTED)
      Examples:     *a.*      Steel is made *from* iron (cf. Nikiforidou 1991: 181)
                 *b.*      The latter models are made *out of* cheaper materials

This is unproblematic in the case of the Thing/Constituent Material relation, since a link to the Subpart/Whole relation also exists.

Yet, many of the relations encoded by the *of*–genitive can *only* be linked to the Originary/Origin relation, which would seem to contradict the hypothesis that Subpart/Whole is the central meaning of this construction, since the Originary/Origin relation does not seem to be connected to the Subpart/Whole relation via a conceptual metaphor. Although there is some evidence for a mapping from Subpart/Whole to Originary/Origin, as (25) shows, this example differs from the other examples given in this and the preceding section, in that it provides evidence for a lexicalized metaphor rather than a productive one: the crucial word, *depart*, has undergone a morphological change and can refer *only* to the Originary/Origin relation. In other words, *depart* does not actually belong to the source domain of partition in present–day English:

(25)  Originary/Origin
      Metaphor:       ORIGINS ARE WHOLES, ORIGINARIES ARE PARTS
      Example:       Most of the boat trips *depart* from Paihiha wharf around 10 am

Furthermore, the Originary/Origin relation itself is not very frequent in the corpus. In other words, there are two problems for the claim that Originary/Origin may constitute an additional central sense of the *of*–genitive: First, the metaphorical link to the Subpart/Whole relation is not entirely convincing. Second, even if this link is taken for granted, the fact that some fairly frequent relations can be linked only to the Originary/Origin meaning raises the following question: how can the Originary/Origin relation function as the central sense for many of the frequent relations, given that it is very infrequent itself, and that its use is very restricted.

We will begin with the second problem. To solve it, we first need to take a look at the meaning of *of* from a diachronic perspective. At the time of the earliest written English records, the primary meaning of *of* was one of *separation* or *motion away from some point*. Up to 1613 it was still used to indicate "the thing, place, or direction whence anything goes, comes, or is driven or moved" (Simpson and Weiner 1989: 711), as in the following examples from the *OED* (Simpson and Weiner 1989: 711ff):

(26)  This wæs gefohten sithan he *of* East Englum com
      'This was fought after he came from East Anglen'

Similarly, up to 1570 it was used to indicate "the place or quarter whence action ... is directed" (ibid.), as the following examples show:

(27)  Lord lookyd *of* heuen on the sonnes of men
      'The Lord looked (down) from heaven on the sons of men'

Up to 1625 *of* was also used in a temporal sense to indicate "a point in time ... from which something begins or proceeds" (ibid.):

(28)  One his chamberlayne whiche he had ... brought up *of* his youghte
      'One of his chamberlains which he had brought up from his youth'

And as late as the end of the 19th century it was still used as a means of "[e]xpressing racial or local origin, descent, etc." (ibid.: 712) and to indicate "the mental or non–material source ... of action, emotion, etc." (ibid.):

(29)  *a.*      Are you *of* Dorsetshire?
              'Are you from Dorsetshire'
     *b.*      I seized my oars *of* instinct and rowed shorewards
              'I seized my oars acting on instinct and rowed towards the shore'

As has become clear from the rough glosses, these meanings are mostly expressed by the preposition *from* in modern English (although the spatial sense is also still present in the preposition *off*, which is—or was—a phonologically strong variant of *of*). The examples show that at the time when the *of*–genitive began developing as an alternative to the *s*–genitive in the 12th century, *of* still had the literal (spatial) Originary/Origin relation as its primary meaning. This explains why many of the other relations encoded by the *of*–genitive in present day English are linked metaphorically to this sense: the extensions to these meanings happened at earlier stages of the development of English and have since become conventionalized.

However, we may not have to content ourselves with a purely diachronic explanation: there is some evidence that the original meaning may still be present in modern English *of* to some degree. For a start, as has already been mentioned, there is a phonologically strong variant of *of*, namely *off*, which is used in the sense of *movement or position away from something*, as examples (30a–c) show:

(30)  *a.*        He took his hand *off* her arm
       *b.*        Please keep *off* the grass

Although the two variants are spelled and pronounced differently—*of* is pronounced /Åv/ or /´v/, while *off* is pronounced /Åf/ or /O…f/—they may be similar enough for at least some speakers to draw a connection between them.

While this point certainly requires further research, there is another, more readily convincing argument: there are contexts in which *of* and *from* appear to be in free variation, as the following examples show:

(31)  *a.*        This frying pan is made *from* carbon steel
       *b.*        This frying pan is made *of* carbon steel

(32)  *a.*        People die *from* AIDS
       *b.*        People die *of* AIDS

Since there can be no doubt about the fact that *from* has a spatial Originary/Origin sense which underlies the metaphorical uses in (31a) and (32a), it is plausible to assume that this sense is also present in the analogous examples with *of* in (31b) and (32b).

Let us now return to the first of the two problems mentioned above—the question how the Originary/Origin relation is linked to the Subpart/Whole relation. Of course, this link may also be the result of diachronic sense development: at the time when *of* began to be used in the partitive sense (under the influence of French *de*), it was still used in a spatial Originary/Origin sense and so the two senses became associated with each other. But again, we do not have to content ourselves with a purely diachronic explanation. Note that the Subpart/Whole and the Originary/Origin relations are conceptually very similar: both are based on the notion of separation from a former point of contact. This similarity may provide a synchronic link between the two senses.[5]

As already mentioned, many of the frequent relations are linked exclusively to the Originary/Origin relation. Consider (33):

(33)  Product/Producer
      Metaphor:      PRODUCERS ARE ORIGINS (OF THEIR PRODUCTS)
      Examples:      *a.*        The currently most sought–after hair product *comes from* one of
                                fashion's best–known hairdressers
                     *b.*        The information *comes from* a reliable *source*

These examples show that producers of physical and of intellectual products can be referred to as origins of their products.

Next, consider (34) which shows that an agent can be seen as the origin of his actions:

(34)  Action/Agent
      Metaphor:      AN AGENT IS AN ORIGIN
      Example:       The judges remarks were *aimed* at the journalists.

Incidentally, this way of talking about an agent is actually compatible with the conceptualization of an agent as the giver of his actions, which was demonstrated by example (7c): A person giving an entity to someone else can be seen as the origin of that entity.

Next, consider (35):

(35)  Effect/Cause
      Metaphor:      CAUSES ARE ORIGINS OF THE EFFECTS (cf. Nikiforidou 1991: 175)
      Examples:      *a.*     People die *from* AIDS
                     *b.*     His achievements are a *source* of personal pride

The examples show that causes are quite naturally seen as origins of their effects. In fact, many dictionaries of synonyms list *origin* as a synonym of *cause*—for example, *Roget's Thesaurus* (Roget 1972: 30).

Next, consider (36), which is not directly linked to the central sense:

(36)  Holder of Attribute/Attribute
      Metaphor:      AN ATTRIBUTE IS A CONSTITUENT PART (cf. Nikiforidou 1991: 182f)
      Example:       [S]how France what American women are *made of*

Here, the holder of an attribute is conceptualized as an entity which is made out of the attribute. Nikiforidou observes (ibid.) that this relation, which accounts for examples like *a woman of great beauty* can only be expressed by the *of*–genitive if the attribute is a distinctive property (one would not normally say, for example, *a woman of beauty*). This makes sense: if the whole person is seen as consisting of a single attribute, it would have to be a property which is so distinctive that it overshadows all other attributes of the person.

Next, the Agent/Patient relation is also indirectly linked to the central sense. It is a special case of an interpersonal relationship (like Kinship and Social or Professional relations), where the two participants are related in virtue of taking part in the same event.

As was the case for the *s*–genitive, there are some peripheral uses of the *of*–genitive which do not seem to be linked to the central sense. Of these, Thing at Location/Location, Location/Thing at Location, Depiction/Depicted, and Cause/Effect have already been discussed, and will therefore not be discussed again here.

In addition, there are relations which, although they are not linked to the central sense, have links to the Thing at Location/Location meaning. First, consider the Action/Patient relation:

(37)  Action/Patient
      Metaphor:      A PATIENT IS A LOCATION (IN THE DIRECTION OF THE ACTION)
      Example:       The judges remarks were aimed *at* the journalists

This example shows that a patient may be conceptualized as the location at which an action is directed. This is coherent with the conceptualization of an agent as the origin of the action: agent and action are locations at the beginning and the end of a path along which the action travels (cf. again note 3 in this context).

Finally, the Possessor/Possessed relation is probably also an extension from the Thing/Location relation, as expressions like *to be* in *possession of something* suggest. It could also be an extension of the Agent/Patient relation, since there is some evidence that not every possessor can be encoded by the head of an *of*–genitive: *John is the owner of a huge fortune* seems more acceptable than *John is the owner of five dollars*. Likewise, *John is the* proud *owner of a '56 Chevy* seems more acceptable than simply *John is the owner of a '56 Chevy*. These examples suggest that the possessor has to be in some way actively responsible for the relationship of possession, in the sense that he or she has to be conceptualized as having spent some effort to attain the state of possessing the possessed.

To sum up, we have seen that the relations which can be encoded by the *of*–genitive form a network of related senses, although the network is more complex than the one for the *s*–genitive because it has several closely related central senses instead of a single one. The question remains, again, why some relations can be expressed by the *of*–genitive although they do not seem to be linked to the central sense. This question will be dealt with in Section 1.5.

1.4  *An abstractionist view of the s–genitive*

According to Langacker (1993), the *s*–morpeheme encodes the *reference–point schema*, which may be defined as the ability to use a conceptually salient entity (the referent of the modifier) as a means of facilitating mental access to a less salient entity (the referent of the head). For example, a speaker wishing to draw the hearer's attention to a particular car, say, a car belonging to a mutual acquaintance called *John*, uses the expression *John's car*. Provided that the hearer can easily identify the referent of *John*, he or she can then use his or her concept of this referent to gain access to a wide variety of other concepts associated with the concept *John*—for

example, his possessions, but also almost any other entity somehow associated with *John*.

This characterization of the meaning of the *s*–genitive seems to be abstract enough to cover all relations encoded by the construction. At the same time, contrary to the 'no meaning' approach, it can account for the fact that most of these relations appear to be non–reversible, as the following examples show (ibid.: 8, Langacker's acceptability judgments):

(38)  *a.*      the boy's watch; the girl's uncle; the dog's tail; the cat's fleas; Lincoln's assassination
      *b.*      *the watch's boy; *the uncle's girl (in the sense of 'his niece'); *the tail's dog; *the fleas' cat; *the assassination's Lincoln

It is intuitively clear that in each of the examples in (38a) the referent of the modifier is more salient than the referent of the head. Where this relation is reversed, as in the examples in (38b), the construction cannot fulfill its reference–point function and hence becomes unacceptable. For this reason, Langacker's account is certainly descriptively more adequate than a 'no meaning' approach or an abstractionist approach on the basis of some notion like *intrinsic connection*.

Langacker opts for an abstractionist account rather than an account on the basis of polysemy because, although he is willing to admit that some senses may be more central than others (he suggests *ownership*, *kinship*, and *body part relations*), he sees two problems for accounts on the basis of polysemy: first, he doubts that a "sophisticated and culture specific" (ibid.: 7) notion like possession (or ownership) as a central sense could explain "the universality of possessives and their early appearance in child speech" (ibid.). Second, he doubts whether other uses could really be explained by metaphorical extension "if the term *metaphor* is used in any restrictive way (e.g. to indicate that the target domain is understood in terms of the source domain)" (ibid.). Particularly the first question certainly requires further research. On the other hand, the linguistic evidence presented in Section 1.2 does seem to show that with respect to the second question it can be claimed that the other relations are at least *spoken of* in terms of the source domain of possession, and the high cue validity of the Possessed/Possessor meaning lends strong support to the polysemy approach: it cannot be accounted for by the abstractionist approach.

However, we have seen that there are some relations which are not linked to the Possessed/Possessor meaning: Thing at Location/Location, Location/Thing at Location, Depiction/Depicted and possibly Cause/Effect. All of these relations can easily be accounted for by the reference–point meaning: it is clear that a location may serve as a reference point for a thing located there and vice versa; that a thing depicted may serve as a reference point for the depiction, and that an effect may serve as a reference point for its cause. In addition, the abstractionist approach explains why creative uses of the *s*–genitive can be interpreted. Thus, Langacker's abstractionist approach has the advantage of covering all cases but the disadvantage of not explaining the fact that some senses are more central (and hence more frequent) than others.

## 1.5    *An abstractionist view of the of–genitive*

Langacker also develops an abstractionist account of the *of*–genitive (Langacker 1992). He begins by showing that, in one of its meanings, *of* encodes "a relationship between two entities, such that one of them ... constitutes an *inherent and restricted subpart* of the other" (ibid.: 484, emphasis in the original). This claim is mainly based on his discussion of the expressions shown in (17) above. However, Langacker then goes on to claim that although the *(sub)part* meaning has a "special cognitive salience" (ibid.: 488) and "is reasonably considered prototypical" (ibid.: 487), it cannot account for examples such as the ones in (39) "without doing violence to the notion *part*" (ibid.: 486):

(39)  *a.*      the chirping of birds; the consumption of alcohol; the destruction of the Iraqi army
      *b.*      a ring of gold; a book of matches; a man of integrity
      *c.*      the state of California, the crime of shoplifting, a distance of 10 miles
      *d.*      an acquaintance of Bill, the chief of this tribe, the father of the bride (ibid.)

Therefore, Langacker argues, the meaning of the *of*–genitive must be described in more abstract terms as "designating some kind of *intrinsic* relationship between the two participants" (ibid.: 486). However, while the meaning of *intrinsic relationship* certainly covers the uses of the *of*–genitive in the examples in (39), it also covers relations that cannot be encoded by the

*of*–genitive. In other words, Langacker's definition is an overgeneralization. In contrast, the polysemy account developed in Section 1.3 can account for most of the examples in (39) as well: some of the examples in (39a) are cases of the Action/Agent relation, the examples in (39b) are cases of the Thing/Constituent Material relation, the examples in (39c) are cases of the Subpart/Whole relation but they are special in that the subpart is identical with the whole, and the examples in (39d) are cases of kinship, social, and professional relations. We have seen that all these relations can be linked to a central sense directly or indirectly. Consequently, there is no need to postulate an abstract meaning to cover the examples in (39).

However, we have seen that there are other relations which are not linked to one of the central senses and hence cannot be accounted for by the polysemy account. These include Thing at Location/Location, Location/Thing at Location, Depiction/Depicted, Action/Patient, and possibly Cause/Effect, Agent/Patient, and Possessor/Possessed. Langacker's abstractionist approach can account for these relations, since all of them may plausibly be considered to be examples of intrinsic relationships: an entity must be located somewhere, a location is only a location with respect to some entity located there, a depiction must depict something, an action usually has a patient (a thing that is affected by the action), an effect must have a cause, an agent usually acts on a patient, and a thing possessed must have a possessor. In addition, the abstractionist approach can account for the fact that *ad hoc* uses of the *of*–genitive can be interpreted. Thus, again, the abstractionist approach has the advantage of being able to account for all relations encoded by the *of*–genitive, but it also has the disadvantage of not explaining why some relations are more central (and hence more frequent) than others.

## 1.6   *A unified view of the polysemy and the abstractionist approaches*

As we have seen, the abstractionist account has a serious drawback in that it does not account for the central status of some semantic relations as compared to others, and it does not delimit the set of relations which can be encoded by the two genitives. This is especially evident in the case of the *of*–genitive, whose meaning is characterized by the vague notion *intrinsic connection*. We have repeatedly mentioned that the problem with this definition is that it overgeneralizes. An example may clarify the problem. Consider (40):

(40)  *a.*     a glass of water
      *b.*     a bowl of oranges

At first glance, these expressions may be analyzed as examples of a relation which may be described as Container/Contained (indeed, they are analyzed in this way by Summers (1987)). Since this relation is a case of an intrinsic connection, the abstractionist account should allow it to be encoded by the *of*–genitive. In contrast, the polysemy approach proposed in Section 1.3 cannot account for this relation, since Container/Contained is not included in the network of relations postulated there. Instead, these examples are analyzed as Subpart/Whole, analogous to *a liter of water*, or *a pound of oranges*. How can we decide which analysis is correct? The abstractionist account may seem more elegant, because it can accommodate the examples straight away on the basis of their classification as Container/Contained while the polysemy approach needs to reanalyze them first. But imagine that there is just one orange left in the bowl. The relation between the two is still one of Container/Contained. Thus, according to the abstractionist view it should be possible to refer to the situation by using the expression in (41):

(41)   *a bowl of an orange

However, this is not possible. The polysemy approach, in contrast, explains the unacceptability of (41) on the basis of a crucial difference between (40b) and (41): example (40b) can be analyzed as an instance of the Subpart/Whole relation (the bowl picks out a subpart from the potentially unlimited amount of oranges). This is not the case for (41), where the indefinite article already picks out a subpart of all oranges—namely *one orange*. Since the Subpart/Whole reading is not available in (41) (*one orange* is not an unlimited quantity from which *a bowl* could pick out a subpart), and since the Container/Contained relation is not part of the semantic network of the *of*–genitive, the expression is not very likely to be acceptable. Consequently, the
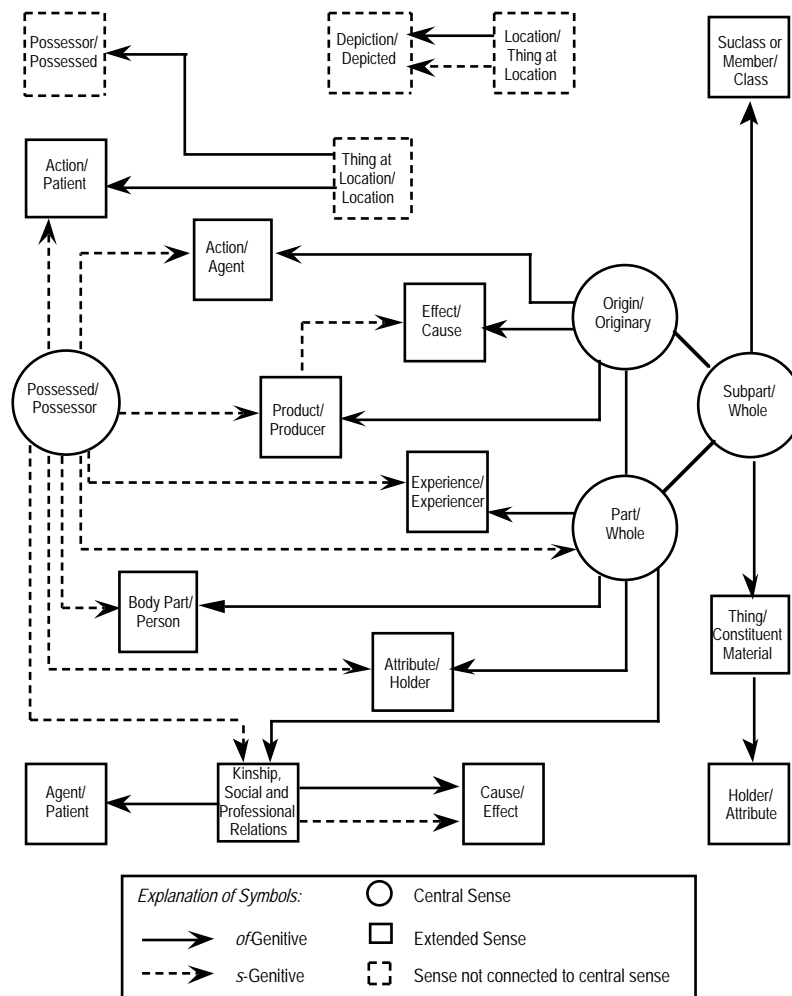
Figure 1: *Semantic network of the s– and the of–genitive*

polysemy approach seems better suited to delimit the set of relations which can be expressed by the genitive.[6]

However, as mentioned above, the polysemy approach may not be able to account for *all* relations which can be encoded by the two genitives: some of the more peripheral senses cannot be linked to the central sense (at least not via conceptual metaphors). Therefore, a combination of the polysemy account developed in this paper and the abstractionist account proposed by Langacker would be more adequate both in describing and in explaining the set of semantic relations which can be encoded by each genitive construction. In fact, Langacker himself hints at the possibility that the two approaches may "complement" each other (Langacker 1992: 36), and that "in cognitive grammar they can be seen as alternative facets of, or perspectives on, the same complex phenomenon" (Langacker 1995: 57).

How exactly are these suggestions to be understood? In Cognitive Linguistics there is the possibility of unifying prototype accounts (i.e., polysemy accounts on the basis of extensions from a central sense) and abstractionist (or schematic) accounts (a detailed discussion of this issue can be found in Langacker 1987: 369ff, Taylor 1990).

Consider the fact that a schema is "an abstract characterization that is fully compatible with all the members of the category it defines" (Langacker 1987: 371), while a prototype is "a schematic representation of the typical instances of a category" (Taylor 1990: 534). In other words, schemata and prototypes are not inherently different modes of mental representation. Instead,

[a] schema is simply a prototype, all of whose instantiations are fully compatible with ... the abstract representation. Conversely, a prototype may be regarded as a schema, some of whose instantiations are only partially compatible with ... the abstract representation. (Taylor 1990: 533)

From this perspective, it is natural for schematic representations and prototypes to coexist and supplement each other in defining categories. Applied to the case of the genitives, this analysis makes it plausible that for each of the two constructions there exist both a prototype and a schema. The prototype and the schema supplement each other in several ways: (i) the prototype defines the central (basic) sense of the construction while the schema defines the abstract sense shared by all instances of the construction; (ii) the prototype defines the set of relations frequently encoded by the construction while the schema may directly account for some peripheral (infrequent) relations not linked to the central sense; (iii) the schema plays a crucial role in determining which relations can *theoretically* be encoded by the construction and may thus account for the fact that ad hoc uses of the genitives which cannot be accounted for by the network of senses linked to the prototype can still be interpreted.[7]

Figure 1 shows the semantic relations which can be encoded by the two genitives, showing the central senses and their extensions as well as those relations which are not linked to the central sense but are accounted for by the schematic sense—*reference point* and *intrinsic connection* respectively (it is meant as a convenient way of summarizing the analyses presented in Section 1.2 and 1.3 and not as a direct depiction of the way in which the semantic networks are represented in the mental lexicon).

## 2    The distribution of the two genitives

### 2.1    *Explanations on the basis of linearization hierarchies*

As has become clear, although the two sets of semantic relations encoded by the *s*– and the *of*–genitive respectively are not identical, the two constructions can in many cases be regarded as alternative means for expressing the same semantic relation. Yet they do not appear to be in free variation. A variety of suggestions has been made as to the factors influencing the choice between the two constructions. These suggestions usually attempt to provide an explanation in terms of a *linearization hierarchy* (cf. Siewierska 1988 for an overview of such hierarchies). More specifically, the following explanations have been put forth:

i. an explanation in terms of the *given-new hierarchy*, which states that elements with given referents precede those with new referents. With respect to the two genitives, this hypothesis predicts that the *s*-genitive is used where the referent of the modifier is given and referent of the head is in focus, whereas the *of*–genitive is used where the referent of the head is given and that of the modifier is new. The first author to formulate this hypothesis explicitly seems to be Altenberg (1980, 1982: 285ff, but cf. also Standwell 1982);

ii. an explanation in terms of the *topic-focus hierarchy*, which states that elements with topical (or *thematic*) referents precede those with *focused* (or *rhematic*) elements. With respect to the two genitives, this hypothesis predicts that the *s*-genitive is used where the modifier is more topical and the head is in focus, whereas the *of*–genitive is used where the head is more topical and the modifier is in focus. This hypothesis has been put forward, for example, by Poutsma (1914: 74), Osselton (1988), and Jørgensen (1984);

iii. an explanation in terms of an *animacy hierarchy*, which states that animate NPs precede inanimate NPs, which in turn precede abstract NPs. With respect to the two genitives, this hypothesis predicts that the *s*-genitive is used where the referent of the modifier is higher up in the hierarchy than the head, whereas the *of*–genitive is used where the referent of the head is higher up in the hierarchy than the modifier. This hypothesis goes back to traditional grammar (cf. Jespersen 1949: 312ff, Poutsma 1914: 42ff). It has more recently been taken up by R. Hawkins (1981) and Deane (1987, 1992);

iv. an explanation in terms of the *principle of end-weight*, which states that shorter elements precede longer elements. With respect to the two genitives, this hypothesis predicts that the *s*-genitive is used where the modifier is shorter than the head, whereas the *of*–genitive is used where the head is shorter than the modifier. This hypothesis has been put forth by Poutsma (1914) and has recently been taken up by Altenberg (1982).[8]

Each of these hypotheses has been tested on the basis of the corpus mentioned in the Introduction. The analysis is based on the corpus described in the Introduction. However, the hypothesis obviously applies only to those semantic relations which allow both the *s*– and the *of*–genitive. Therefore, we exclude from the present investigation all examples of those semantic relations which can only be encoded by one of the two constructions. This leaves us with 448

*s*–genitives and 230 *of*–genitives.

*Given-New*

In this study, the notions *given* and *new* are operationalized in terms of *look–back* (or *referential distance*), which "assesses the gap between the previous occurrence in the discourse of a referent ... and its current occurrence in a clause ... The gap is thus expressed in terms of *number of clauses to the left*" (Givón 1993: 13, emphasis his). The smaller the value of the look–back, the more given an NP is.

The most straightforward prediction which follows from the *given-new* hypothesis is the following:

(42)  The majority of those constructions where the modifier is more given should be *s*–genitives, while the majority of those constructions where the head is more given should be *of*–genitives. Where both NPs are equally topical, there should be no difference in the distribution of *s*– and *of*–genitives.

Consider Table 2, which shows the distribution of the *s*–genitive and the *of*–genitive in the corpus with regard to the topic–focus structure of the head and the modifier.

**Table 2**: The distribution of the *s*–genitive and the *of*–genitive in the corpus with regard to the given–new structure of the head and the modifier

|                      | *s*–Genitive |       | *of*–genitive |        | Total |       |
|----------------------|--------------|-------|---------------|--------|-------|-------|
| Head more given      | 55.26%       | (21)  | 44.74%        | (17)   | 100%  | (38)  |
| Modifier more given  | 85.09%       | (331) | 14.91%        | (58)   | 100%  | (389) |
| No difference        | 38.25%       | (96)  | 61.75%        | (155)  | 100%  | (251) |

The results show that there is a significant difference between the *s*– and the *of*–genitive ($\chi^2_{(2)}=151.44$, $p<0.001$). However, this difference is not the one predicted by the *given-new* hypothesis. Instead, the *s*–genitive seems to be the preferred construction in all cases where there is a difference between the head and the modifier with respect to givenness, irrespective of whether it is the head or the modifier which is more given. This preference is stronger in the case of those constructions where the modifier is more given. The *of*–genitive seems to be preferred when there is no difference between head and modifier.

Consequently, the distribution of the two genitives with respect to their given-new organization contradicts the hypothesis that it is the given-new structure of the constructions that determines their distribution.

*Topic-Focus*

The terms *topic* and *focus* are operationalized here in terms of *persistence* (or *decay*), which assesses the importance of a referent in the subsequent discourse by counting the occurrences of the referent in a given number of clauses to the right (Givón 1984: 15). The higher the value of the persistence, the more topical an NP is.

The main prediction which follows from the *topic-focus* hypothesis is the following:

(43)  The majority of those constructions where the modifier is more topical should be *s*–genitives, while the majority of those constructions where the head is more topical should be *of*–genitives. Where both NPs are equally topical, there should be no difference in the distribution of *s*– and *of*–genitives.

Consider Table 3, which shows the distribution of the *s*–genitive and the *of*–genitive in the corpus with regard to the topic–focus structure of the head and the modifier.

**Table 3**: The distribution of the *s*–genitive and the *of*–genitive in the corpus with regard to the topic–focus structure of the head and the modifier

|                        | *s*–Genitive |       | *of*–genitive |        | Total |       |
|------------------------|--------------|-------|---------------|--------|-------|-------|
| Head more topical      | 79.59%       | (39)  | 20.41%        | (10)   | 100%  | (49)  |
| Modifier more topical  | 82.72%       | (249) | 17.27%        | (52)   | 100%  | (301) |
| No difference          | 48.78%       | (160) | 51.22%        | (168)  | 100%  | (328) |

Again, the results show that although there is a significant difference between the *s*– and the *of*–genitive ($\chi^2_{(2)}$=84.98, *p*<0.001), the prediction in (42) is not borne out by the data. Instead, the distribution is very similar to that in Table 2: the *s*–genitive is preferred in all cases where there is a difference between the head and the modifier with respect to topicality, irrespective of whether it is the head or the modifier which is more topical. This preference is stronger in the case of those constructions where the modifier is more topical. The *of*–genitive is, again, preferred when there is no difference between head and modifier, although there is only a slight difference between the two constructions.

*Animate-Inanimate-Abstract*
In the present investigation *animacy* is operationalized in terms of a very elaborate version of an animacy hierarchy used by Deane (1987) to explain the distribution of the two genitives. It the following simplified version of a hierarchy originally devised by Michael Silverstein to explain the distribution of accusative and ergative case in split–ergative languages:

(44)    1st or 2nd person pronoun > 3rd person animate pronoun > 3rd person inanimate pronoun > proper name > kin term > human lexical NP > non human animate NP > inanimate NP > discrete place or location > abstract NP (cf. Deane 1987: 68)

The prediction following from the *animacy hypothesis* is the following:

(45)    The majority of those constructions where the modifier is located higher up in the semantic hierarchy than the head should be *s*–genitives, while the majority of those constructions where the head is higher up in the hierarchy than the modifier should be *of*–genitives.

Consider Table 4, which shows the distribution of the possible combinations of lexical types of the head and the modifier with respect to the two genitives.

**Table 4**: The distribution of the possible combinations of lexical types of head and modifier with respect to the two genitives

|  | *s*–Genitive | | *of*–genitive | | Total | |
|---|---|---|---|---|---|---|
| Head more animate | 27.78% | (10) | 72.22% | (26) | 100% | (36) |
| Modifier more animate | 83.95% | (429) | 16.05% | (82) | 100% | (511) |
| No difference | 6.87% | (9) | 93.13% | (122) | 100% | (131) |

The results show a significant difference in the distribution of the possible combinations of lexical types ($\chi^2_{(2)}$=301.27, *p*<0.001), which bear out the first prediction with respect to the *s*–genitive: an *s*–genitive is chosen in the clear majority of those cases where the modifier is located higher up in the hierarchy. The predictions are to some degree borne out with respect to the *of*–genitive: the majority of those cases where the head is higher up in the semantic hierarchy is expressed by the *of*–genitive, although the preference is not as clear as it is in the case of the *s*–genitive, and there are very few constructions of this type in absolute terms. Finally, there is an overwhelming preference for the *of*–genitive where there is no difference in the lexical types of head and modifier, which is unexpected in light of the predictions of the animacy hypothesis.

*Short-Long*
In the present study, length is defined as *number of syllables*, since this definition has proven to be fruitful in other studies on grammatical variation (e.g., Chen 1986).
    The most straightforward prediction which follows from the *end–weight hypothesis* is the one in (46):

(46)    The majority of constructions whose head is longer than the modifier should be *s*–genitives, while the majority of constructions whose modifier is longer than the head should be *of*–genitives.

Consider Table 5, which shows the distribution of the *s*–genitive and the *of*–genitive in the corpus with regard to the syntactic weight of the head and the modifier.

**Table 5**: The distribution of the *s*–genitive and the *of*–genitive in the corpus with regard to the syntactic weight of the head and the modifier

|  | *s*–Genitive | | *of*–genitive | | Total | |
|---|---|---|---|---|---|---|
| Head heavier | 76.16% | (278) | 23.83% | (87) | 100% | (365) |
| Modifier heavier | 30.14% | (44) | 69.86% | (102) | 100% | (146) |
| No difference | 75,45% | (126) | 24.55% | (41) | 100% | (167) |

In contrast to the first three predictions, the one in (46) is borne out with respect to both genitives: the majority of those constructions whose head is heavier than the modifier consists of *s*–genitives, while the majority of those constructions where the modifier is heavier than the head consists of *of*–genitives. When there is no difference between the head and the modifier, the *s*–genitive seems to be preferred. This distribution is highly significant ($\chi^2_{(2)}= 107.24$, $p<0.001$).

*Discussion of the four hypotheses*
Let us briefly summarize the results and findings presented in the preceding four sections.

In our investigation of the two functional hypotheses (*given-new* and *topic-focus*) we find that the *s*–genitives follow the expected pattern while the *of*–genitives do not. Although the functional hypotheses predict that the more topical/more given element should always come first, this turns out to be true only with respect to the *s*–genitive, which is indeed strongly preferred where the modifier is more topical. With respect to the *of*–genitive, however, the prediction fails: in those few cases where the head is more topical, the *s*–genitive is also preferred, while the *of*–genitive is preferred where there is no difference in topicality between the head and the modifier.

In our investigation of the animacy hypothesis, a similar picture emerges. Again, the *s*–genitive follows the expected pattern, while the *of*–genitive does not: the animacy hypothesis predicts that the element which is located higher up in the semantic hierarchy should always come first, but this prediction is borne out by the data only with respect to the *s*–genitive, which is indeed strongly preferred where the modifier is higher up in the hierarchy. However, with respect to the *of*–genitive the results are less clear: the *of*–genitive is definitely preferred where there is no difference between the two nominals. It may also be preferred where the head is higher up in the hierarchy, but, due to the low frequency of such cases, it is difficult to tell.

Finally, in our investigation of the end–weight hypothesis we find that, contrary to the topic–focus organization and the semantic type of the head and the modifier, end–weight does indeed influence the choice between the two constructions as the hypothesis predicts.

To sum up, we find an asymmetry between the two genitives with respect to all the factors investigated, except for the factor of end–weight: the hypotheses work for the *s*-genitive, but not for the *of*-genitive. How, then, can this asymmetry be accounted for, and why does it not arise in the case of end–weight?

Consider the fact that the two genitives differ in one important respect, namely the linear order of the head and the modifier: in the case of the *s*–genitive, the modifier precedes the head, while in the case of the *of*–genitive the head precedes the modifier. Conceivably, this difference in the linear (i.e., temporal) order of the constituents is in some way responsible for the asymmetry between the two constructions. The question is, how?

To answer this question, we have to return to Langacker's (1993) account of the *s*–genitive as a manifestation of the reference–point schema. Recall that, according to Langacker, the referent of the modifier serves as a reference point for the referent of the head. In other words, a speaker uses an *s*–genitive in order to enable a hearer to identify a less salient entity (the referent of the head) via a more salient entity (the referent of the modifier). Recall also, that Langacker (1995) tentatively extends this analysis to the *of*–genitive (which he takes to denote an intrinsic relationship):

When one entity bears an intrinsic relationship to another, which serves to characterize it, that other entity is naturally taken as a reference point for establishing mental contact with it. ... Indeed, the most abstract construal of *of*, namely the generalized notion of an intrinsic relationship ... implies the reference–point relation and has little if any additional content. (Langacker 1995: 67f)

In other words, Langacker claims that in the case of the *of*–genitive the modifier also serves as a

reference point for the head. This claim is quite plausible if we consider the fact that the semantic roles of the head and the modifier remain constant where both constructions are possible: for example, the holder of an attribute is always encoded by the modifier where the Attribute/Holder of an Attribute relation is concerned—regardless of whether an *s*– or an *of*–genitive is chosen. From a semantic point of view, the holder of an attribute always serves as the reference point for the attribute.

If Langacker's claim is correct, both the animacy hypothesis and the functional hypotheses apply not at one level (the linear order of constituents) but at two levels: first, the level of linear order and second, the level of the reference–point organization manifest in the syntactic structure. On the level of linear order the predictions are as we have investigated them above: the first element should be more topical or higher up in the semantic hierarchy, regardless of its place in the syntactic structure (or its reference–point function). On the level of syntactic structure, however, it is always the modifier which should be more topical or higher up in the semantic hierarchy, since a reference point must be easier to access than the entity it serves to identify.

This insight explains the strange asymmetry between the two genitives quite straightforwardly. Consider (47), which shows the prediction of the two hypotheses with respect to the *s*–genitive, and (48), which shows the prediction of the two hypotheses with respect to the *of*–genitive. In each case the box containing the element which should be more topical or higher up the hierarchy is shaded.

(47)
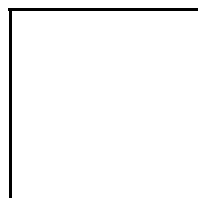


(48)
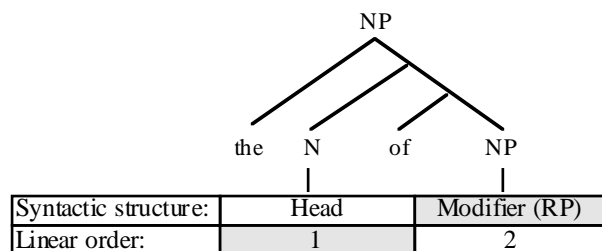


In the case of the *s*–genitive the hypotheses make the same predictions on both levels: it is in both cases the modifier which should be more topical or higher up in the hierarchy. In the case of the *of*–genitive, however, there is a conflict between the linear order and the syntactic structure with regard to both the functional hypotheses and the animacy hypothesis: on the level of linear order, the head should be more topical or higher up in the hierarchy, but on the level of syntactic structure (or reference–point organization) the modifier should be more topical or higher up in the hierarchy.

The hypothesis that the functional hierarchies and the animacy hierarchy apply at two levels can thus explain the asymmetries between the *s*– and the *of*–genitive. The question remains, why no such asymmetries can be observed in connection with the end–weight hypothesis. The answer is quite straightforward: contrary to the other two hypotheses, the end–weight hypothesis makes no claims whatsoever about what constitutes a good modifier. It makes claims only about the linear order of elements: the question of reference–point organization is irrelevant for the position of the element needed to identify a construction as a genitive (cf. note 8). Instead, the position of this element (the *s*–morpheme or *of*) depends solely on the length of the first NP. Therefore, there is no conflict between the two levels in the case of either of the two genitives, which in turn means that there should be no asymmetries.

To sum up, the asymmetries between the two constructions with respect to the functional hypotheses and the animacy hypothesis can be explained once the reference–point function of the two genitives (as realized syntactically by the head–modifier organization) is taken into consideration. While the functional hypotheses and the animacy hypothesis apply at two levels, which leads to a conflict in the case of the *of*–genitive, the end–weight hypothesis applies at the

level of linear order only, which means that there cannot be a conflict between the two levels. Accordingly the end–weight hypothesis successfully predicts the choice between the two constructions is determined where they are both available.

However, none of the hypotheses discussed here can account for the fact that most of the relations which allow both genitives still strongly prefer one of the two: if the choice were determined by factors such as the ones discussed here, we would expect a fairly even distribution between the two constructions for those relations which can be encoded by both. The next section deals with this issue.

## 2.2    *An explanation on the basis of the semantic relation encoded*

We have seen that, although the end–weight hypothesis makes the right predictions for both genitives, it can hardly explain why most semantic relations so clearly favor one of the two constructions. Therefore, additional factors determining the choice between the two constructions have to be to be found. In order to do so, we will return to the semantic relations shown in Table 1.

Note that the frequencies in Table 1 show that the semantic relation encoded is a powerful factor in the choice between the two genitives: some relations only allow one of the two constructions. It is therefore quite plausible to assume that the semantic relation encoded may also play a role in determining the choice between the two genitives in those cases where both constructions are possible.

Consider the list in (49), which shows those semantic relations where there is a clear preference for the *s*–genitive over the *of*–genitive, the list in (50), which shows those semantic relations where there is a clear preference for the *of*–genitive over the *s*–genitive and the list in (51), which shows those relations where there is no clear preference[9]:

(49)    *Semantic relations where the s–genitive is preferred*
      *a.*      Kinship relations
      *b.*      Product/Producer
      *c.*      Body Parts
      *d.*      Experience/Experiencer
      *e.*      Social and Professional relations
      *f.*      Action/Agent

(50)    *Semantic relations where the of–genitive is preferred*
      *a.*      Depiction/Depicted
      *b.*      Part/Whole
      *c.*      Action/Patient
      *d.*      Effect/Cause

(51)    *Semantic relations where there is no clear preference*
      *a.*      Attribute/Holder of Attribute
      *b.*      Location/Thing at Location

There seem to be two ways in which the semantic relations themselves may contribute to this distribution, in both cases by their relative closeness to one or the other prototypical meaning: first, the metaphoric links to one of the central senses may be stronger than those to the other, i.e., the metaphors may be more pervasive (more widely used, pertaining to more linguistic elements from the source domain, etc.). Second, the central sense may be present to some degree in all uses of the *s*–morpheme and *of* respectively: in this case it may be compatible with different expressions to varying degrees (this possibility seems to be very much in line with the prototype approach to the genitive as developed by Taylor 1989a).[10]

Let us begin with the possibility that the distribution of the semantic relations in (49) to (51) is—at least in part—due to the varying strength of the metaphors linking them to the two central senses.

In the case of (49a and e) this is very plausible: the metaphor linking kinship, social and professional relations to the Possessed/Possessor sense is a very widespread and productive one: We *gain* or *win* friends, we *lose* friends and relatives, etc. The metaphors linking interpersonal relations to the Subpart/Whole or the Originary/Origin sense, on the other hand, are very restricted, pertaining to Member/Group relations (*He is* part of/comes from *a wealthy family*), or very close love relationships (*You are a* part *of me*).

A similar argument can be made for the Experience/Experiencer sense: again, the metaphor linking it to the Possessed/Possessor sense is much more productive and widespread than the one linking it to the Subpart/Whole sense: We *gain* experiences, we may be *robbed* of our sense of dignity, etc.; but while we can say that our experiences become a *part* of us, this is not the usual way of conceptualizing them.

The different preferences for (49c) and (50b) can also be explained by the strength of the metaphoric mappings: while we experience our body parts as individuated entities which we may *lose*, other Part/Whole relations are not as readily linked to the Possessed/Possessor sense: it sounds odd, for example, to say of a door that it has *lost* the bolt, but it is quite natural to conceptualize a bolt as a subpart of a door.

Finally, the preference of the Effect/Cause sense for the *of*–genitive can also be explained by the strength of the different metaphors: it is linked to the Possessed/Possessor relation only via the Product/Producer relation (*This drug* produces *no side effects*), but it is linked directly to the Originary/Origin relation (*This drug may actually be the* source *of your headache*).

For the other relations, an explanation on the basis of the different strength of the metaphors does not suggest itself: the metaphor linking the Action/Agent sense to the Possessed/Possessor sense does not seem to be stronger than the one linking it to the Originary/Origin sense, and the metaphor linking the Action/Patient sense to the Originary/Origin sense does not seem to be stronger than the one linking it to the Possessed/Possessor sense. Instead, the distribution is probably due to the distinction between the subjective and the objective reading, which has not been dealt with in this paper (but cf. Quirk et al. 1991: 322). This leaves (49b) and (50a) unexplained for the moment.

Next, let us turn to the second explanation—the possibility that the central sense may be present to some degree in all uses of the *s*– and the *of*–genitive, and that it may be compatible with different expressions to varying degrees. The possession model as defined by Taylor (1989a, b, 1996) requires, among other things, that the referent of the modifier be animate, that it control the access to the referent of the head, that the referent of the head be of some value, and that the two referents be spatially close. The model capturing the aspects shared by the Originary/Origin and the Subpart/Whole relation, on the other hand, places no restrictions on the nature of the referents of the head and the modifier as far as animacy is concerned (although inanimate entities may be slightly preferred), but it requires that the referent of the head be separated from the referent of the modifier, the two having been in a situation of contact previously. Clearly, if the semantics of these two models were present in each use of the *s*– and the *of*–genitive respectively, they would be incompatible with certain semantic relations.

For example, the Body Part/Person sense is not compatible with the separation aspect of the Subpart/Whole sense, but it has a strong affinity to the possession model (body parts are valuable to us, they are spatially dependent on us, etc.). The Effect/Cause sense, on the other hand, is not compatible with the animacy aspect of the possession model. Thus the choice between the two genitives may be determined by both the strength of the metaphoric mapping *and* the compatibility with the central sense; it is clear that the two possibilities are not mutually exclusive. Yet they need not occur together: note that the two relations which could not be explained by the strength of the metaphoric mapping can be accounted for by the second explanation: the Depiction/Depicted sense is clearly more compatible with the aspect of separation from a previous situation of contact than with the animacy, value and spatial proximity aspects of the possession model: in order to take a picture of someone, for example, we do not have to be in a situation of contact, and the picture exists as a entity separate from the depicted entity. The Product/Producer relation, on the other hand, implies an animate referent of the modifier (especially in the case of intellectual products); it implies that the referent of the modifier controls access to the referent of the head (again, especially so in the case of intellectual products); it implies that the referent of the head has a certain value; and it implies that the two referents are spatially close to each other. Accordingly, it is clearly more compatible with the Possessed/Possessor sense than with the Subpart/Whole or Originary/Origin relation.

Finally, let us see if these two explanations can also account for the fact that there is no clear preference for one of the two constructions in the case of the relations in (51). Let us begin with the Attribute/Holder of Attribute relation. It is difficult to determine whether the metaphoric links to the Possessed/Possessor and the Subpart/Whole relation differ in strength. It is quite natural to say of someone that he or she has *lost* his or her good looks, but it is equally natural to say of someone that his or her good looks are a *part* of him or her. Accordingly, there seems to be no preference for one construction over the other according to the first criterion, which fits the fact

that it is almost equally often encoded by both constructions. As far as the compatibility with the two central senses is concerned, the preference of the Attribute/Holder of Attribute relation seems to depend on the referent of the modifier noun. When the referent is animate, the relation seems to be more compatible with the possession model: our attributes are often of value to us, we can control the access to them to a certain extent (we can hide most of our attributes if we choose to), and, of course, there is a close spatial proximity between an attribute and its holder. When the referent of the modifier is inanimate, the relation is not compatible with the possession model: an attribute cannot be of value to an inanimate object, and an object cannot control the access to its attributes. Thus, the referent of the modifier may apparently play a role in determining the choice between the two constructions (although not necessarily in the way the proponents of the animacy hypothesis suggest). Finally, let us consider the Location/Thing at Location relation, for which the frequencies of the two genitives are also very similar. The first criterion is not applicable in this case, since there are no metaphoric links to either of the two central senses. This correlates well with the fact that there is no preference for one of the two constructions. The second criterion seems to depend, again, on the referent of the head: while an animate referent may well control the access to its location, an inanimate referent can not do so, and while its location may be valuable to an animate being, it cannot be of value to an inanimate object.

To sum up, the semantic relation seems to have an influence on the choice between the two genitives even in those cases where both constructions are possible. It is therefore slightly misleading to talk of a 'semantic equivalence' even in these cases. Of course, the analysis presented here has yet to prove that it can stand up to closer scrutiny by further research: it will have to be extended to those senses of the two genitives which were ignored here because of their low frequency.[11] In order to do so, a larger corpus is needed. The analysis will probably have to be corroborated by psycholinguistic experiments of some sort. Yet, even as it stands, it seems capable of contributing its share to the complex list of factors influencing the choice between the two genitives of English.

However, taken by itself it does not explain why there should be any exceptions to the rule, i.e., why a relation which clearly favors one of the two genitives for semantic reasons should be encoded by the other of the two constructions at all. Before we conclude the present chapter, we will therefore turn to the issue of how the semantic relation encoded interacts with the principle of end–weight.

## 2.3    *The interaction between the semantic relation encoded and the principle of end–weight*

Let us recapitulate what we have so far suggested with respect to the influence of both the semantic relation encoded and the factor of end–weight on the choice between the two genitives.

The factor of end–weight proves to have a clear influence on the choice of construction, but this influence is neither absolute, nor can it account for the fact that even the semantic relations which in principle allow both the *s–* and the *of–*genitive clearly favor one of the two in the corpus investigated in Chapter 1.

The account developed in the preceding section shows how the strong preferences of most relations for one of the two genitives can be explained, but it offers no explanation as to why there should be any variation at all. How can the two accounts be brought together?

Note that linearization hierarchies like the end–weight principle can only apply where variation in the order of constituents actually exists. This restriction accounts for the fact that there is no variation between the two constructions, for example, in the case of the Subpart/Whole relation: for semantic reasons, the choice is simply not available. But note that the question of whether or not the choice between the *s–* and the *of–*genitive is available need not always be answered in absolute terms. Instead, it may be a matter of degree. In other words, different relations may permit a variation between the two constructions to different degrees. This would account for the fact that a semantic relation may allow a choice, but still favor one of the two constructions.

In order to test this hypothesis, let us see what prediction it makes. If we assume that the type of semantic relation defines the norm (i.e., determines which construction should generally be preferred), then the principle of end–weight has to explain the exceptions. In this case the principle of end–weight should come into play only in those cases where the length of the second NP is above average. The following prediction follows from this assumption:

(52)   In the case of the exceptions from the semantically determined norm, the average length of

the second NP should be higher than in the case of the genitives keeping to the semantically determined norm.

Let us begin with the relations shown in (49) above. These relations strongly prefer the *s*–genitive, but there are exceptions where they are encoded by the *of*–genitive. Table 6 compares the average length of the heads and modifiers of the exceptional *of*–genitives with that of the *of*–genitives keeping to the semantically determined norm.

**Table 6**: Comparison between the average length (in syllables) of the heads and modifiers of the *of*–genitives deviating from the semantic norm and the average length of the heads and modifiers of all other *of*–genitives

|  | Exceptions from norm | Other *of*–Genitives |
|---|---|---|
| Average length of head | 4.07 | 3.98 |
| Average length of modifier | 5.35 | 4.17 |

The results show that the difference in length between head and modifier is greater for the exceptional *of*–genitives than it is for all other *of*–genitives. A U–test shows that the difference between head and modifier is significant ($z=2.4859$, $p<0.05$). Thus, the exceptional *of*–genitives do indeed differ from the *of*–genitives keeping to the semantically determined norm in the way predicted. As for the differences between the exceptional *of*–genitives and all other *of*–genitives, a U–test shows that it is significant for the modifiers ($z=2.28$, $p<0.05$), although it fails to reach significance for the heads ($z=0.31$, $p>0.05$). A significant difference in the length of one of the two constituents is enough, however, since the principle of end–weight hinges on the difference in length between head and modifier, and not on their absolute length. Therefore, we can take these results as a confirmation of the hypothesis.

Next, consider Table 7, which shows the corresponding data for the exceptional *s*–genitives (i.e., the ones encoding one of the relations shown in (50)).

**Table 7**: Comparison between the average length (in syllables) of the heads and modifiers of the *s*–genitives deviating from the semantic norm and the average length of the heads and modifiers of all other *s*–genitives

|  | Exceptions from norm | Other *s*–Genitives |
|---|---|---|
| Average length of head | 3.56 | 2.86 |
| Average length of modifier | 1.72 | 1.41 |

The results show that, again, the difference in length between head and modifier is greater in the case of the exceptional *s*–genitives than it is in the case of all other *of*–genitives. A U–test shows that the difference between head and modifier is significant ($z=2.49$, $p<0.05$). The difference between the exceptional uses and all other uses fails to reach significance ($z=1.23$, $p>0.05$ for the comparison between the heads; $z=1.73$, $p>0.05$ for the comparison between modifiers). However, we can take the results as a trend pointing in the right direction, especially since in the case of the modifiers the difference between the exceptional *s*–genitives and all other *s*–genitives misses significance by a fairly narrow margin ($p=0.08$).

Finally, let us briefly consider the relations listed in (51), which show no clear preference for either of the two constructions. We will not go into any detail here, since the prediction is merely that they need not differ from the corpus as a whole with respect to the average length of head and modifiers (although they may do so without disproving the hypothesis developed in this section).

**Table 8**: Average length of heads and modifiers of the genitives encoding a semantic relation which shows no clear preference for one of the two constructions (cf. (51)).

|  | *s*–Genitives | | *of*–Genitives | |
|---|---|---|---|---|
|  | Relations in (51) | Whole Corpus | Relations in (51) | Whole Corpus |
| Average length of head | 3.44 | 2.89 | 4.40 | 4.00 |
| Average length of modifier | 1.64 | 1.42 | 4.46 | 4.40 |

Table 8 shows the average length of the heads and modifiers of the genitives encoding a

semantic relation which shows no clear preference for one of the two constructions. As we can see, the results for these relations do not vary greatly from those for the corpus as a whole.

To sum up this section, there seems to be an interaction between the semantic type encoded by a genitive construction and the length of the second NP such that the semantic relation determines which of the two constructions is preferred while the principle of end–weight accounts for exceptions to the semantically determined norm. Unfortunately, only one of the comparisons between the exceptional uses and all other uses reaches significance, which means that a larger corpus study would be needed to confirm the trends postulated here.

## Conclusion

I hope that this paper has shown that the semantics of the English genitives are not quite as elusive as the quotations at the beginning of Section 1 suggest, and that a coherent account the two constructions and the sets of meanings they typically encode is, in principle, possible.

In Chapter 1 we saw that there are four approaches to the bewildering variety of relations encoded by each of the two constructions: (i) we can list every single relation separately, assuming that they are completely unrelated and that the fact that they are expressed by the same form is an historical accident; (ii) we can claim that the two genitives have no meaning at all, and that all expressions containing genitives are interpreted on the basis of contextual and world knowledge; (iii) we can try to find a single meaning for each of the two constructions, which is abstract enough to cover all relations encoded; (iv) we can try to find a basic meaning for each construction, to which all other relations are somehow related. We saw that the fourth approach is the most promising of the four, since each of the other three has certain drawbacks.

Next, we developed a polysemy account of the two constructions on the basis of a detailed taxonomy of semantic relations for each of the genitives, building on the work of Taylor (1989a,b) and Nikiforidou (1991).

We saw that according to the criterion of *cue validity* there are good reasons to assume the Possessed/Possessor relation to be the central sense of the *s*–genitive and the Subpart/Whole relation to be the central sense of the *of*–genitive. Using the theory of conceptual metaphor and metonymy, we then tried to find for each relation the link to one or both of the central senses. With respect to the *s*–genitive we found that it is possible to find links for all the frequent relations. With respect to the *of*–genitive, we found that, for historic reasons, it is necessary to postulate an additional central sense, namely the Originary/Origin relation. We found that the presence or absence of links to the central senses can explain the fact that some relations can be expressed by both genitives but others only by one of them: those relations which are linked the Possessed/Possessor meaning as well as the Subpart/Whole and/or the Originary/Origin meaning can be expressed by both constructions, those relations which are only linked to one of the central senses can only be expressed by the corresponding construction.

We also found that some of the marginal relations do not seem to be linked to either of the central senses. In order to account for these, we combined the polysemy approach with the abstractionist approach, adopting Langacker's (1992, 1993) assumption that both constructions encode the *reference–point* relation, and that the *of*–genitive has the abstract meaning of *intrinsic relationship*. For each construction the central sense and its extensions can then account for the frequently encoded relations and their relative importance, while the abstract meaning accounts for some of the marginal relations and, possibly, the interpretability of novel uses.

In Chapter 2 we tested four of the most important hypotheses concerning the choice between the two genitives in those cases where a semantic relation can be encoded by both constructions: a hypothesis on the basis of given vs. new information, a hypothesis on the basis of topical vs. focused information, a hypothesis on the basis of an animacy hierarchy, and a hypothesis on the basis of the end–weight principle. We saw that, due to a conflict between the linear order of the constituents and the reference–point organization in the case of the *of*–genitive, the animacy hypothesis and the two hypotheses on the basis of information structure cannot account for the choice between the two genitives (although the animacy hypothesis may turn out to be relevant in a study using a larger corpus). The end–weight hypothesis, in contrast, can account for this choice, although the factor of end–weight does not determine the choice in an absolute way. Instead, we saw that it interacts with the semantic relation encoded, such that the semantic relation determines which of the two constructions is generally preferred, while the principle of end–weight accounts for exceptions to this general preference.

Accordingly, the paper has shown that the semantics of the two genitives not only *can* be described and explained, but that they *must* be described and explained in order to account for their distribution.

## Notes

[1] This paper is an abridged version of my master's thesis (Stefanowitsch 1997). Apart from the fact that I have largely stripped it of the review of literature and the discussion of the theoretical framework of cognitive linguistics, it differs from the original version in two important respects: first, the semantic relations that can be encoded by the two genitives are discussed in much more detail. The existence and the internal structure of each relation is motivated on the basis of the corpus. This is especially true of the relations Body Part/Person and Part/Whole (which are traditionally subsumed under the (metaphorical) label 'inalienable possession', and the Subpart/Whole relation, which is often not distinguished from the Part/Whole relation. Second, the hypotheses discussed in section 2.1 of this paper are investigated with a higher degree of statistical sophistication in the original paper. However, the results do not differ from the ones presented here in any significant way.

[2] The relations are given roughly in the order of the proportion of each of the two constructions for each relation. The semantic role of the head precedes the semantic role of the modifier in all cases. Most of the semantic relations should be self-explanatory. The use of the term *subpart* instead of *part* is justified in the discussion of the of-genitive in section 1.3. The terms *depiction* and *depicted* refer to representations in all modes (not just the visual). The term *subclass* includes single members of a class. The archaic term *originary* is used to avoid the rather clumsy *thing originated*.

[3] Cf. in this context Langacker (1990), who suggests that transitive sentences typically encode what he calls *prototypical action*, defined as an "interaction in which energy is successively *transmitted from one participant to the next*" (ibid.: 216, emphasis added). The conceptualization of actions as possessions which are transferred from one entity (the agent) to another entity (the patient) is clearly in line with this characterization.

[4] In this context it is important to recall the distinction between language use and language system: an *s*–genitive may be perfectly acceptable on the level of the language system, since there is a metaphoric link for it, while at the same time it may be very infrequent on the level of language use because the link is not very strong.

[5] Further evidence for the close link between the Subpart/Whole and the Originary/Origin relation may be seen in the fact that there are some semantic relations encoded by the *of*–genitive which can be reached via different metaphoric mappings from both meanings. For example, Attribute/Holder of Attribute is linked to Subpart/Whole (recall the mapping given in (20)), but it is also linked to Originary/Origin via the metaphor HOLDERS OF ATTRIBUTES ARE ORIGINS (OF THEIR ATTRIBUTES) as illustrated by examples like *Walter* radiates *intelligence [and] confidence*. Likewise, Kinship is linked to Subpart/Whole (recall the mapping in (3), but it is also linked to Originary/Origin via the metaphor A FAMILY IS AN ORIGIN, as illustrated by *I* come from *a large family*.

[6] Note that, strictly speaking, the polysemy approach does not *predict* the unacceptability of (41) or any other example. Instead it *explains* it. The only strong claim that the polysemy approach makes is that all those relations which are linked to the central sense must be acceptable when encoded by the genitive. This does not exclude the possibility that there are relations that are not linked to the central sense may also be encoded by the genitive (although such expressions should be fairly infrequent). Thus it may be the case that a polysemy approach 'undergeneralizes' to some extent—in other words, genitive expressions may be located at different points on a scale from fully motivated examples to fairly arbitrary examples with the polysemy approach accounting only for the motivated examples. The abstractionist approach, on the other hand, necessarily overgeneralizes: a common meaning for all examples—*including* those at the arbitrary end of the scale—will also cover relations which are not encoded by the genitive.

[7] Consider again the expression *a bowl of an orange*. While the network of relations around the Subpart/Whole relation does not accommodate this example (which is why it is not expected to be acceptable), the schematic value *intrinsic connection* does cover it (which is why it is expected to be *interpretable*). Likewise, the schematic representation can function as a guideline for the addition of new relations to the network in diachronic sense development (for example, the Container/Contained relation could theoretically become part of the network once the appropriate metaphors develop).

[8] This principle has long been known, but no convincing explanations for it have been made until recently, when very interesting proposal for such an explanation came from J. Hawkins (1994), who suggests that in order to increase speed and efficiency in language perception, linguistic material is always presented in a way that allows the earliest possible recognition of all immediate constituents involved (ibid.: 57ff). The precise details of his theory are of no concern to us here. Instead, we will briefly discuss what the general approach would predict in the case of the two English genitive constructions.
The element crucial to the identification of the genitive construction is the s–morpheme in the case of the *s*–genitive

and the preposition *of* in the case of the *of*–genitive. In other words, at the point when hearers hear the *s*–morpheme or the preposition *of*, they will realize that they are dealing with a genitive construction. Since the *s*–morpheme and *of* carry much of the meaning of the *s*–genitive and the *of*–renitive respectively, this realization is crucial to the interpretation of the noun phrase in which the genitive occurs. Accordingly, the earlier the element in question occurs, the better—and the shorter the first NP of the construction is, the earlier the element in question will occur. This offers a straightforward explanation for the fact that longer NPs are preferred in second position (it should be noted that this account is true to J. Hawkins' (1994) theory in spirit rather than in letter: the account given here assumes that the two genitives must be recognized *as constructions*, which is not an interpretation, I believe, which J. Hawkins would necessarily follow).

9    The relations are listed in the order of strength of preference. Semantic relations whose frequency is below 2.5% for both the *s*– and the *of*–genitive are omitted from the lists in (49) and (50) as well as from the following discussion for two reasons: (i) for the reasons discussed in Section 1.2.4 it is more important to account for the more frequently occurring relations, and (ii) the reliability of the relative frequencies of *s*– and *of*–genitives is very low for the infrequent relations, i.e., it is not clear whether one of the two is actually strongly preferred in these cases.

10    Note that, theoretically, there is a third possibility: the abstract (schematic) sense of each of the two constructions may be compatible with different expressions to varying degrees. However, as we saw in Chapter 1, there are no suggestions as to how the abstract senses of the two constructions may differ.

11    Some cross–linguistic evidence for the feasibility of the approach developed here comes from Campe's (1997) work on the variation between the synthetic genitive and the *von*–construction in German: she shows that the synthetic genitive tends to encode "stable" relations of "interdependence" between the referents of the head and the modifier, whereas the *von*–construction tends to encode "separational" relations of "relative independence" (ibid.). This agrees nicely with the tendencies described here for the corresponding English constructions.

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