45. POSSESSIVES AND RELATIONAL NOUNS

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45. Possessives and relational nouns

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*This article concentrates on nominal possessives (*John's friend*) rather than on verbal possessives (*John has a friend*). In* John's friend*,* John *is the* POSSESSOR*, and* friend *describes the entity possessed (the* POSSESSEE*). Nominal possessives constitute a major construction type in the languages of the world.*

In contrast with a sortal noun (e.g., person*),* friend *is a (two-place)* RELATIONAL NOUN*: a person counts as a friend only in virtue of standing in a particular relationship with another individual. Relational nouns are an important element in the study of possessives because the content of a possessive typically, perhaps characteristically, depends on the content of a relational nominal.*

Possessives provide particularly compelling support for type shifting as a general principle of syntactic and semantic composition. Possessives also inform debates involving definiteness, binding, and a wide variety of other semantic phenomena.

1. Preliminaries

This article will concentrate mainly on English. Although the majority of the semantic work on possessives also concentrates on English, this limitation does not do justice either to the richness of possessives in other languages, nor to the richness of the literature.

1.1. **Main possessive constructions.** English has two main possessive constructions:

(1)	John's brother	Prenominal possessive
(2)	the brother of John	Postnominal possessive

(Other possessive constructions will be introduced below.) The prenominal possessive is often called the Saxon genitive for historical reasons.

In the prenominal possessive, the possessive morpheme *'s* is an edge clitic (Miller 1991), since it attaches to the final word at the rightmost edge of a full DP ([*the man*]*'s hat*, [*every man*]*'s hat*, [*the Queen of England*]*'s hat*, [*the person I was just talking to*]*'s hat*, etc.). Because a possessive is itself a DP, possessives can be nested arbitrarily deep (*John's friend's mother's ... lawyer's brother*).

Although English once had a robust case system (a vestige remains in the possessive forms of pronouns, *his*, *hers*, etc.), English no longer has a true genitive case. Nevertheless, English possessive constructions are often called genitives, and I will sometimes refer to them this way.

Other constructions mentioned or discussed below include the construct state in Semitic (*beyt ha-more* 'the teacher's house', section 4.3); possessive compounds (*the men's room* 'bathroom', section 5); quantificational possessives (*most planets' rings*, section 6); bare possessives (*John's* 'John's house', section 8); double-genitives (*a friend of John's*, section 9; possessive dependent plurals (*these women's husbands*, section 10); and nominalizations (*the Roman's destruction of the city*, section 11).

Among the constructions that will not be discussed, unfortunately, are verbal possessives (*John has a son*). In addition, it should be noted that in many languages the syntax and semantics of possessives and partitives are intricately and intimately related to a degree that goes far beyond that of the English possessive and partitives constructions discussed below in section 9.

1.2. **Relational nouns.** The denotation of *male*, for instance, can be modeled as a simple set of individuals. Then Bill is male just in case $\mathbf{b} \in [\![male]\!]$. The noun *brother*, in contrast, denotes a relation between individuals, that is, a set of pairs of individuals. Then Bill will be a brother of John just in case $\langle \mathbf{b}, \mathbf{j} \rangle \in [\![brother]\!]$.

Strictly speaking, sortal properties such as the denotation of *male* are (one-place) relations, but it will be useful to use the terms 'sortal' and 'property' exclusively for one-place relations, and 'relation' for two-place relations.

Only some nouns are properly relational. As pointed out by, e.g., Löbner (1985: 292), many pairs of nouns that apply to the same set of objects nevertheless contrast minimally with respect to the sortal/relational distinction:

(3)		SORTAL	RELATIONAL
	a.	a day (*of someone)	a birthday of someone
	b.	a person (*of someone)	a child of someone
	c.	an animal (*of someone)	a pet of someone

Each day is somebody's birthday, and each birthday is a day. Likewise, every person is someone's child, and each child is a person. However, a day counts as a birthday only in virtue of standing in a certain relationship to a person. Note that only the relational nouns are able to take a postnominal genitive *of* phrase.

Sortal nouns stand to relational nouns as one-argument verbs stand to two-argument ones. Conceptually, dining, eating, and devouring all entail the existence of an object that gets consumed; yet even assuming the statements in (4) describe the same event, the presence of an overt direct object can be prohibited, optional, or required, depending on the specific lexical item involved:

(4)		INTRANSITIVE	TRANSITIVE
	a.	We dined.	*We dined the pizza.
	b.	We ate.	We ate the pizza.
	c.	*We devoured.	We devoured the pizza.

It is often said that nominal arguments are always optional, and to a first approximation this is true. However, nouns display the full paradigm of optionality illustrated above for their verbal counterparts:

(5)		INTRANSITIVE	TRANSITIVE
	a.	the stranger	*the stranger of John
	b.	the enemy	the enemy of John
	c.	*the sake	the sake of John

At the conceptual level, qualifying as a stranger, an enemy, or someone's sake requires the existence of some object that stands in a certain relation to the described object. After all, someone who is a stranger to John may be well known to me, likewise for an enemy; and doing something for John's sake very different than doing it for my sake. This is as much to say that *stranger*, *enemy*, and *sake* are intrinsically relational.

Nevertheless, despite the fact that a possessor argument is conceptually obligatory for all three predicates, it is not possible to express the possessor relatum for *stranger* overtly, either by means of a genitive *of* phrase or by a prenominal possessive (**John's stranger*). In contrast, overt expression of the possessor argument is optional for *enemy*, and, as implicitly noted by Quine (e.g., Quine 1960:236), obligatory for *sake*. Following Partee (1997), we can adopt the verbal terminology and say that *stranger* is obligatorily intransitive, *enemy* is optionally transitive, and *sake* is obligatorily transitive.

1.3. **Bindability of the implicit possessor.** Partee (1989) notes that the implicit argument of an intransitive relational noun can sometimes be bound by a quantifier, as in *Every soldier faced an enemy*, which has the paraphrase 'Every soldier x is such that x faced x's enemy'. This provides evidence that the suppressed relational argument remains grammatically present, perhaps in the form of a variable. Curiously, as Partee notes, this sort of bound reading is not always possible: compare *Every soldier wrote a mother*, which does not have a paraphrase that entails that each soldier x wrote to x's mother.

1.4. **Derived versus underived relational nominals.** Derived nominals can have elaborate argument structures inherited from their verbal source, e.g., *the purchase of the property by the woman for a pittance*. For whatever reason, non-derived nouns appear to have a strict upper limit of two on the number of overtly expressible participants. That is, sortal nouns have one participant (*person*, *stick*), relational nouns have two participants (*mother*, *leg*), but there are no non-derived relational nouns that have three participants. To appreciate what such a noun could be like, consider *grandmother*. Two people x and z stand in the grandmother relation just in case there is some y such that x is the mother of y and y is the parent of z. Conceptually, then, *grandmother* is a three-place relation. However, as far as I know there is no language in which all three of the participants can be overtly specified: **Ann is the grandmother of John by Mary*.

1.5. **Inalienability.** The most common relational concepts lexicalized in the world's languages include family relations (*mother*, *uncle*, *cousin*); body parts (*hand*, *head*, *finger*); and intrinsic aspects of entities such as *color*, *speed*, *weight*, *shape*, *temperature*. In some languages prepositions are frozen possessives (*at the river* is expressed literally as 'the river's place'). Many languages grammatically distinguish between alienable and inalienable possession, where the inalienable nouns express a set of inherently relational concepts. In some languages, alienable possessee

nouns receive a special morphological marking; in some languages, inalienable possessives are constructed differently, often by juxtaposition of possessor and possessee rather than with an overt possessive linking particle (Chappell and McGregor 1996). In English, to the extent that only relational nouns can participate in the postnominal genitive possessive construction (*the brother of Mary*, **the cloud of Mary*), English makes a syntactic distinction between alienable (*cloud*, *squirrel*) and inalienable (*brother*, *speed*) nouns.

In languages that morphosyntactically mark such distinctions, a two-way contrast is by far the most common (alienable versus inalienable), though some languages make morphosyntactic distinctions among four or more classes of possessed nouns.

2. Compositionality, type-shifting, and the lexical versus pragmatic distinction

Prenominal and postnominal possessives can be very close to paraphrases of each other, as seen in (1) and (2) (*John's friend* versus *the friend of John*). However, we shall see that the prenominal possessive systematically has a wider range of interpretations.

The meaning of a possessive involves three main elements: two individuals (the possessor and the possessee), and a relation between them, which I will call the Possession Relation. For instance, in *John's sister*, the possessor is John, the possessee is some woman, and the possession relation holding between John and the woman is the sibling relation (or, if you like, the female-sibling-of relation). In this case, the possession relation is identical to the relation denoted by the head noun *sister*. I will call this a lexical interpretation, since the possessive relation is identical to the context of some lexical item.

If the head noun is not relational, a lexical interpretation is obviously not possible. In *John's cloud*, the noun *cloud* is not a relational concept, and the relationship between John and the cloud must come from some source other than the lexical meaning of the noun. Perhaps it is a cloud John is watching, or a cloud that he is painting, or a cloud that is saliently associated with John for some other reason. I will (perhaps somewhat presumptuously) call this a pragmatic interpretation, since the content of the possessive relation must come from the pragmatic context.

There are three related puzzles for compositionality, all of which remain unsettled. First, are there two distinct constructions, or is the lexical interpretation just a particularly salient way of resolving the pragmatic relation? Second, if there are two distinct meanings,

where does the ambiguity reside? In the possessive morpheme? In the meaning of the nominal? Third, in the pragmatic use, where does the possession relation come from, and how exactly does it combine compositionally with the other elements of the DP?

In many treatments, pragmatic possession relations are introduced via a context-controlled variable, much in the same way that a pronoun that is not grammatically bound receives its value from context. (Note that here, context supplies a relation rather than an individual.) If the interpretation of pragmatic possessives does involve a free relational variable whose value is supplied by context, then possessives are unusual in the typology of variables in failing to be capable of being quantificationally bound. For instance, as Stanley (2000) points out, there is no bound interpretation of *Whenever John has something to do with a cat, he expects it to behave like Mary's cat.* If there were, this sentence would entail that whenever John kicks a cat, he expects it to behave like the cat that Mary kicked, and whenever John looks at a cat, he expects it to behave like the cat that Mary looked at, and so on.

As mentioned above in section 1.5, the postnominal genitive *of* possessive strongly prefers lexical interpretations (Barker 1995, Partee 1997). Thus *John's sister* (with a relational head noun) can be paraphrased as *the sister of John*, but *John's cloud* (which has a sortal head noun) cannot be described as ??*the cloud of John.* This makes the postnominal construction a diagnostic for relational nouns. We can analyze the genitive *of* phrase as semantically inert (an identity function), a purely syntactic marker signalling that the object of the preposition is an argument of the relational head nominal. On this analysis, the possession relation for a postnominal possessive is simply the denotation of the relational head noun.

See also articles 6 *Compositionality*, 25 *Mismatches and coercion*, and 96 *Type shifting.*

2.1. **Possession relations for sortal possessees: the π type-shifter.** The problem, then, is what to do with the non-relational case: there must be some way to take a non-relational nominal and turn it into a relational nominal, perhaps by means of a type-shifting operator such as $\pi = \lambda P \lambda x \lambda y.Py \wedge R\,x\,y$, where R is a free (pragmatically controlled) variable standing for the possession relation. Then $[\![\textit{John's cloud}]\!] = \pi([\![\textit{cloud}]\!])(\mathbf{j}) = \lambda y.\mathbf{cloud}(y) \wedge R\mathbf{j}y$, the set of clouds that stand in the R relation to John. (This renders the meaning of the possessive as a property; see sections 3 and 4 on predicative uses and definiteness.)

There is another way of thinking about the composition on which the possessor phrase is in charge. This approach follows, e.g., Abney (1987) in conceiving of the possessive as a determiner phrase (rather than as a noun phrase), with the possessor phrase in the role of the determiner (i.e., the head of the phrase). This gives the possessive clitic (or some silent functional element associated with the prenominal construction) some semantic work to do. For instance, for the relational interpretation we might assign the possessive clitic the denotation $\lambda x \lambda P \lambda y.Py \wedge R\,x\,y$.

But then we would need an additional denotation for the possessive clitic to allow for lexical possessives, perhaps $\lambda x \lambda R \lambda y R\,x\,y$, so that on a lexical interpretation we would have $[\![\textit{John's brother}]\!] = \lambda y.\mathbf{brotherj}y$.

Note that π, which enabled a sortal noun to shift to a (pragmatically-controlled) relation, is a type-shifter in the sense of Partee (1987): a silent operator that adjusts the syntactic category and the semantic type of an expression in order to allow composition to proceed. It turns out that possessives and relational nouns are a type-shifting playground, with many different opportunities for positing type-shifters. I will mention a few of the type shifters that have been argued to be motivated by possessive interpretations, without trying here to find a principled way of choosing which set of shifters best covers the empirical ground.

2.2. **The detransitivization type-shifter Ex.** Most compositional treatments posit a detransitivizing type-shifter that turns a relational nominal into a non-relational one, perhaps $\mathbf{Ex} = \lambda R \lambda x.\exists y R\,y\,x$. Such a type-shifter aims to capture the systematic relationship between relational uses (*John's relative*) and uses without an overt possessor (*the relative*, which means 'the person x such that there is a y such that x is the relative of y').

But the detransitivizing shifter is far more useful than merely allowing relational nouns to appear without an explicit possessor. Although possessives containing a relational head noun usually receive a relational interpretation, they can also receive a pragmatic interpretation on which the possession relation does not coincide with the lexical relation. On this sort of interpretation, *John's brother* would refer to some male person who has a sibling, and who is related to John through some kind of circumstantial association. Perhaps two journalists have been assigned to profile each of the sons of some famous person; then we can refer to one of the profile targets *John's brother*, the brother of someone that John is assigned to profile. Given the detransitivizing

shifter, we can arrive at the observed interpretation by detransitivizing *brother*, and then shifting it back to (a different, pragmatically controlled) relation: $\pi(\mathbf{Ex}([\![brother]\!])) = \lambda x \lambda y.\exists z \mathbf{brother} zy \wedge Rxy$.

In fact, in the presence of a detransitivizing type-shifter, it is at least technically feasible to give a unitary denotation to the possessive clitic in the following way: assume that every nominal denotes a sortal property. If the head noun is relational, this requires shifting it using the detransitivizing shifter **Ex**. Then the only way to arrive at a possessive interpretation is by applying π, which introduces a pragmatically-controlled relational variable. The strong tendency to give prenominal possessives a relational interpretation simply reflects a strong tendency to resolve the pragmatically-controlled relation in favor of the most salient relation around, namely, the relation denoted by the head noun.

One problem with positing a detransitivizing shifter is that although almost every relational noun can be used without an overt possessor, there are some that cannot. For instance, as noted above in section 1.2, **the sake* is ungrammatical, and only a lexical reading is possible for *her sake*. Apparently, **Ex** must not have *sake* in its domain.

2.3. **The *favorite* type-shifter.** Not all shifting operators are silent. As noted by Barker (1995: 68), Partee (1997), Partee & Borschev (1998, 2000), and Vikner & Jensen (2002), *favorite* is capable of turning a sortal into a relational concept. That is, *favorite cloud* denotes a relation between an individual and a cloud, namely, the likes-best relation. As evidence that the phrase *favorite cloud* is relational, note that it can either take a postnominal genitive *of* phrase (*the favorite cloud of most painters*, *the favorite food of Queen Amy*) in addition to a prenominal possessive (*Most painters' favorite cloud*, *Queen Amy's favorite food*).

Contrary to theories in which type-shifting is always obligatorily motivated only by syntactic or semantic mismatch, the interpretations that motivate type-shifting analyses of possessives combine in intricate ways that strongly suggests (something close to) free optional application. For instance, it is possible to start with a relational noun, detransitivize, then re-transitivize with *favorite*: an actress can express a preference for one of the three daughter roles in *King Lear* by saying *Regan is my favorite daughter* (the speaker's favorite among the set of women who are daughters of some unspecified person). Similarly, it is possible for a nominal with *favorite* to undergo detransitivization (*Macaroni and Cheese—Always a Favorite Recipe*). With

a relational nominal (*Cornelia—always a favorite daughter*), we arguably have detransitivized not only *daughter*, but also *favorite daughter* (**Ex**(**favorite**(**Ex**(**daughter**)))).

As noted by Partee & Borschev (2000), it is particularly difficult to force a detransitivized interpretation of *favorite* in the presence of an overt possessor. Nevertheless, if a group of printers is each typesetting one favorite recipe, *John's favorite recipe* can refer to the favorite recipe that John is responsible for typesetting.

2.4. **Qualia type-shifters and the control type-shifter.** Where do pragmatic possession relations come from? Vikner and Jensen (e.g., 2002) give a partial answer that involves articulating π into a set of type-shifters. They begin from an assumption that even the prenominal possessive uniformly takes a relational nominal. If the head noun is intrinsically relational (e.g., *brother*), that relation can serve as the possession relation directly. If the head noun is not intrinsically relational (e.g., *poem*), the meaning must shift to a relational meaning in a manner partially constrained by lexical information associated with the noun. Following Pustejovsky (1995), Vikner and Jensen suppose that the lexical entries of nouns provide certain regular relational information called QUALIA, and that when non-relational nouns shift to relational meanings, they naturally favor resolving the possession relation in favor of their qualia. Thus *John's poem* can be the poem John read (shifting with the TELIC quale), or the poem John wrote (shifting with the AGENTIVE quale). The CONSTITUTIVE quale is especially important in their system, and governs the relational meaning of nouns referring to parts (e.g., *edge*, *leg*, etc.).

Vikner and Jensen provide the following map of possessive meanings, often discussed in the literature:

Partee & Borschev, Barker	Possession Relation	Vikner & Jensen
lexical	inherent	lexical
	part-whole	
pragmatic	agentive	
	control	
	[others]	pragmatic

Figure 1. Vikner and Jensen's map of possessive meanings

Note that Vikner and Jensen add a special shifter that does not correspond to any of Pustejovsky's qualia called CONTROL. Control here encompasses at least ownership (*John's house*, i.e., legal control) and also physical control (*John's stick*, the stick that John is holding). Thus control is similar to the non-technical meaning of the word 'possess'. Unlike inherent, part-whole, and agentive relations, the control relation is not assumed to vary from one noun to another. The justification for counting control as lexical is that it is supposed to be always available, independently of the pragmatic context.

The distinction between control relations and extemporaneous pragmatic relations is subtle but grammatically genuine, both in English and cross-linguistically. To mention just two instances, Storto (2000, 2004) observes that if John and Bill are attacked by wild dogs in the street, we can say *John's dogs were rabid*, where *John's dogs* expresses a pragmatic relation between John and the dogs that attacked him. John certainly does not stand in a control relation with respect to the dogs in question. But if we use the double genitive *the dogs of John's* (see section 9), we can only be referring to dogs that John owns or otherwise controls. Similarly, Heller (2002) reports that the Construct State in Hebrew can express control relations, but not (non-control) pragmatically-supplied relations.

2.5. **The *former* type-shifter.** The adjective *former* throws a monkey wrench into some theories of possession relation composition. As noted by Partee (1997), Larson (1998), Partee and Borschev (1998), and Larson & Cho (2003), modified relational nouns as in *old friend*

or *my former mansion* can be ambiguous: *old friend* can either describe an aged friend, or else a long-time friend; *my former mansion* can mean either 'the building I own that used to be a mansion' or else 'the mansion that I formerly owned'. In other words, the no-longer entailment of *former* can target either the non-relational properties by virtue of which an object qualifies as a mansion, or else it can target the relation itself. Since *former* combines with the following noun before combining with the possessor phrase (*my* [*former mansion*]), in order for *former* to modify the possession relation, the possession relation (in this case, control) must already be present in the nominal *mansion*. This suggest that it is not (always) the possessor that shifts a property to a possessive meaning, since this would be too late (compositionally speaking) for *former* to modify the possession relation. (An as yet unexplored possibility is that *former* might lift to take the possessor as an argument, analogously to the way that a quantificational DP in object position can take scope over its transitive verb.)

According to Larson and Cho, the ambiguity of *former* possessives supports a particular theory of the syntactic structure of nominals on which the two interpretations of *former* correspond to the size of the syntactic constituent modified by *former*. Partee and Borschev give a type-shifting analysis which depends on two assumptions: that *former* is polysemous between a version that combines with properties (former^1 house^1) and a shifted version (former^2) that combines directly with relations (former^2 wife^2). If a sortal noun shifts to a relation (former^2 $(\pi\ \mathit{house}^1)$), we get the relation-in-the-past interpretation.

Note that it is difficult to get a relation-modifying interpretation when the possession relation is a non-control pragmatic relation. That is, *my former cloud* cannot refer to the cloud that I used to be watching. Following Partee and Borschev's logic, this suggests that non-control pragmatic readings may be introduced only by the possessor phrase, rather than internal to the possessee nominal. In addition, for some reason relation-modifying *former* is incompatible with restrictive modifiers (so in *my former Filipina wife*, *Filipina* must be appositive).

2.6. **Summary of section 2.** In sum, the variety and flexibility of possessive interpretations argue strongly for a corresponding variety of both overt (*favorite*) and covert (**Ex**, π) type-shifting elements. These typeshifters apply with a high, but incomplete, degree of optionality and freedom.

3. Predicative uses

In many contexts, use of a possessive whose possessor is definite requires reference to a unique object (for singular possessives) or to the maximal set of described objects (for plural possessives). For instance, if I tell you that my children are smart, I normally convey the thought that all of my children are smart. Uniqueness for singulars and maximality for plurals is one of the hallmarks of the definite determiner, so this association of possessives with maximality supports the conclusion that possessives are inherently definite.

However, as discussed by Mandelbaum (1994: chapter 4), Partee (1997), Partee & Borschev (1998, 2000), and especially by Partee & Borschev (2001), and others, in many contexts possessives can be used with non-unique or non-maximal reference. One major class of examples are the so-called weak definite possessives (*That's the leg of a llama*), which are discussed below in section 4. But in some circumstances prenominal possessives can also be used non-maximally. Possessives in the predicate position of a predicative copular sentence in particular do not require maximality. If I tell you that "Those [pointing left] are Harold's tools", I can continue "...and *those* [pointing right] are Harold's tools too". Similarly, saying *John is my friend* differs from saying *John is my only friend* precisely in failing to entail that I have no other friends. Likewise, describing someone as *my good friend Peter* does not entail I have only one good friend.

Non-maximal uses of possessives seem to be strongly correlated with predicative uses. If we put the possessive in subject position, maximality implications return. Thus if I say *Harold's tools are over there*, I must be talking about all of Harold's tools (at least, all of Harold's tools that are going to be relevant for present conversational purposes).

These predicative uses are peculiar to possessives. In contrast, definite descriptions do not lose their uniqueness/maximality implications in predicative position: *John is the tall friend* or *Those are the tools* both require that the definite descriptions refer to the maximal set of objects that satisfy their descriptive content.

Because predicative uses correlate with specific syntactic environments, it is tempting to try to analyze the failure of maximality as something that is added to the basic meaning of the possessive in specific syntactic contexts. The difficulty with this idea is that it is far from clear how to do it. If the basic meaning of a possessive is individual-denoting (or the principal ultrafilter generated by an individual), there is no way to shift that individual into a suitable property without recovering the relational noun involved, which violates the part

of the principle of non-compositionality that prohibits taking apart a meaning once it has already been built. (If you favor a structured-meaning approach for propositions, however, it might be possible to have a structured-referent approach for possessives, but as far as I know, this has not been proposed.)

The obvious alternative would be to assume that the basic meaning of possessives is predicational, and that uniqueness/maximality implications are what is added. If so, then despite the fact that contexts with unique/maximal interpretations are far more common (and do not seem to form a natural class), it is the predicative uses that allow the true nature of possessive meaning to shine through.

According to Partee and Borschev (1998, 2000, 2001), predicative interpretations can only involve a control interpretation (see section 2.3).

4. Definiteness

Definiteness is a morphosyntactic category. (See article 42 *Definiteness and indefiniteness*.) At least those DPs determined by *the* are definite, and at least those DPs determined by *a* are indefinite. Prenominal possessives are often believed to be uniformly definite, but such claims usually are based on semantic considerations. One of the few reasonably reliable syntactic correlates of definiteness is the ability to appear in the existential *there* construction. Definite DPs can appear in pivot position only with degraded grammaticality (or else a special list interpretation):

(6) a. There is [a tall man] in the garden.
b. *There is [the tall man] in the garden.

As mentioned, prenominal possessives are often assumed to be uniformly definite. A more accurate alternative generalization, usually attributed to Jackendoff (but hard to find in published work) is that a prenominal possessive can appear in the existential *there* construction if and only if its possessor phrase can:

(7) a. There is [a tall man]'s lawyer in the garden.
b. *There is [the tall man]'s lawyer in the garden.

Apparently, a prenominal possessive inherits its definiteness status from its possessor phrase.

The key semantic properties that correlate with definiteness are familiarity (Heim 1982) and uniqueness (Russell 1905). If a DP carries

a familiarity presupposition (as many definite DPs do, especially pronouns), it can be used only in a discourse that contains a salient, previously established ('familiar') discourse referent corresponding to the referent of the DP.

(8) a. She sat, then [a senator's daughter] asked me a question.
b. She sat, then [the senator's daughter] asked me a question.

In (8a), *a senator's daughter* must refer to a person different than the referent of *she*, that is, it must be a novel (i.e., non-familiar) use, just as a use of *a senator* in the same position would necessarily be novel. But in (8b), *the senator's daughter* (when deaccented) can refer to the referent of *she*, just as *the senator* can. Thus it is not quite correct (contra Barker 1995, 2000) to say that a possessive inherits its familiarity/novelty status from its possessor phrase. Although a possessive with an indefinite possessor (as in (8a)) appears to have a novelty requirement just like its possessor (i.e., *a senator's daughter* must refer to a novel discourse participant), possessives with definite possessor phrases (as in (8b)) can refer either to a familiar discourse participant, or else can perfectly felicitously serve as a novel description, i.e., provide the first mention of a new discourse participant: in (8b), *the senator's daughter* can very well be the first mention of the described person in the discourse.

It turns out that definite possessives share this familiarity/novelty neutrality with definite descriptions in general. Gundel et al. (1993) reject familiarity as a requirement on definite descriptions. Rather, they propose that definite descriptions must describe an entity that is uniquely identifiable in the discourse context based on the content of the description alone. And, as Birner & Ward (1994) observe, it is perfectly possible to use a definite description as a first mention: *Go into the next room and bring me the bag of chips lying on the bed* is fine even if the bag of chips is not familiar, as long as there is just one (salient) bag of chips on the bed. Once we understand that definite descriptions have a uniqueness requirement but not a familiarity requirement, we can recognize that possessives also inherit their novelty/uniqueness properties from their possessor: a possessive with an indefinite possessor must be novel, just like its possessor, and a possessive with a definite possessor must describe a unique object in the discourse situation, whether that object is discourse-familiar or not.

4.1. **Possession relations as functions.** In a highly influential paper, Löbner (1985) proposes that the definite determiner "indicates that the head noun is taken to be a functional concept". Since Löbner

explicitly assumes that prenominal possessives are definite in the relevant sense, it follows that prenominal possessives can only be used if it is possible to construe the possession relation as functional.

(9) He put his hand on her knee.

This counterexample, due to Christophersen (1939), naturally describes one hand out of two placed on one knee out of two. According to Löbner, such examples involve abstract configurations in which the relevant participants have exactly one hand and exactly one knee. But in addition to this counterexample, predicative uses (discussed above in section 3) and possessive weak definites (discussed immediately below) stand as systematic counterexamples to Löbner's proposal, at least in its strongest form. However, there may be possessive constructions in other languages for which the possession relation must indeed be functional; see section 4.3.

4.2. **Possessive weak definites.** There are well-known (though still imperfectly understood) exceptions to the generalization that definite descriptions must uniquely identify a referent (Abbott 2004, Carlson et al. 2006). They are fairly sporadic, and in particular, not robust in the face of compositional modification. That is, if you say *Let's take the elevator*, any elevator in the bank of elevators will do. But if you say *Let's take the big elevator*, there had better be at most one (salient) big elevator. There is, however, a class of systematic exceptions noticed by Poesio (1994), which I will call possessive weak definites:

(10) a. I hope the cafe is located on [the corner of a busy intersection].
b. Then Superman smashed into [the side of a Marlboro-emblazoned truck].

These are definite descriptions. After all, they are headed by the definite determiner. Yet there is no uniqueness implication (let alone a familiarity implication): in (10a), there is no way to tell which of the four corners of the intersection the speaker has in mind. Likewise, in (10b), the relevant side of the truck need not be familiar, nor need it be uniquely identified by the descriptive content.

Woisetschlaeger (1983) observed that possessive weak definites can appear in the existential *there* construction.

(11) There was [the wedding picture of a young black couple] among his papers.

(12) And there was [the picture of a boy I had known slightly in high school]

Woisetschlaeger maintains that these uses are necessarily generic, and therefore still definite. He argues that in (11), wedding pictures of couples are a natural kind. However, it is implausible in (12) that pictures of boys the speaker had known slightly in high school is a natural kind.

Barker (2004) notes that because possessive weak definites are postnominal possessives, these weak definites only occur in the presence of a relational head noun (*corner*, *side*, *picture*). He suggests that there is still uniqueness, just not uniqueness of reference. Rather, what is unique is the contrastive selection of one relation over another: the *corner* of a busy intersection, not the middle; the *side* of a truck, not the top; the *picture* of a couple, not their wedding certificate.

4.3. **Construct State: (in)definiteness spread.** Semitic languages typically have two possessive constructions called the Construct State and the Free State, which we can view (only very roughly) as homologous with the prenominal Saxon possessive and the postnominal prepositional possessive in English. The following examples are from Hebrew:

(13) a. beyt ha-more — CONSTRUCT STATE
house the-teacher
'the teacher's house'

b. ha bayit šel ha-more — FREE STATE
the house of the-teacher
'the house of the teacher'

In the Construct State, a bare head noun undergoes certain morphophonemic changes (here, *beyt* instead of *bayit*). The Construct State as a whole is usually said to inherit the definiteness of the possessor. The mechanism by which this occurs is often called Definiteness Spread (analogously, Indefiniteness Spread). According to Dobrovie-Sorin (2000b, 2004) and to Heller (2002), (in)definiteness spread is a consequence of the functional nature of the relation expressed by the Construct State. Following Löbner (1985), they assume that the construct state can only express functional relations, either naturally, as a result of the lexical meaning of the possessee nominal (e.g., Hebrew *roš* 'head') or by coercion.

4.4. **Summary of section 4.** In English, prenominal possessives inherit morphosyntactic definiteness from their possessor. If the possessor phrase is indefinite, the possessive must refer to a novel entity (just as the possessor phrase must). If the possessor phrase is definite, the possessive must describe a uniquely identifiable object (just as the

possessor phrase must). Postnominal possessives are definite or not depending on the head article. However, for poorly understood reasons, possessive weak definites (*the corner of a busy intersection*), unlike normal definite descriptions, do not have any uniqueness implications.

Chung (2008) argues that possessives do not automatically inherit (in)definiteness from their possessors in Maori and Chamorro. Similarly, Alexiadou (2005) surveys a number of languages, and concludes that there is considerable variation cross-linguistically in the relationship between the definiteness of a possessive and the definitness of its parts. Haspelmath (1999) considers article/possessive complementarity from a cross-linguistic perspective, concluding that definiteness plays an important role.

5. Possessive compounds

Possessives can sometimes be syntactically ambiguous: *the men's rooms* can either refer to some rooms possessed by some salient group of men ([*the men*]*'s rooms*), or it can refer to some salient group of bathrooms (*the* [*men's rooms*]). In the latter case, *men's rooms* forms a possessive noun-noun compound (Taylor 1996: chapter 11). Possessive compounds are moderately productive. Like other noun-noun compounds, established possessive compounds often take on idiomatic meanings (for instance, *men's room* has an idiomatic meaning on which it means 'bathroom'). When novel, like other noun-noun compounds, they require context to make their intended meaning recoverable, and they must describe some class of objects that are "nameworthy" (Downing 1977) given current conversational purposes.

According to Barker (1995) and Taylor (1996), possessive compounds do not tolerate phrasal components. This means that adding adjectival modifiers or other phrase-level elements to either half of the compound disrupts possessive compounds. Thus [*the tall men*]*'s clean rooms* can only have a structure on which *the tall men* is a constituent, and there is no idiomatic interpretation involving bathrooms. Munn (1995) and Strauss (2004) argue that this conclusion is mistaken, and the relevant constructions can be phrasal.

Possessive compounds reveal a deep similarity between noun-noun compounds on the one hand, and phrasal possessives on the other hand. The connection is that both construction types can express pragmatically-controlled relations over pairs of individuals. Typical (non-possessive) noun-noun compounds (*dog house*, *rail road*, *pumpkin bus*) all require there to be some specific type of relation between the objects described by the first noun and the objects described by

the second noun (lives-in, made-of, goes-to). By inserting a possessive morpheme, possessive noun-noun compounds merely make the need to recover a pragmatically-supplied relation overt. As a result, the compositionality issues related to understanding where pragmatically-controlled possession relations come from are intimately connected with those relating to compounds (e.g., Kamp and Partee 1995).

6. Scope, binding, and quantificational narrowing

Like other DPs inside of DPs, possessor phrases can take inverse scope (see article 69 *Scope and binding*).

(14) a. One person from every city hates it.
b. One sibling of every celebrity resents her fame.
c. Every celebrity's siblings resent her fame.

(14a) is a standard (non-possessive) case of inverse linking involving a locative preposition. The point of interest is that the quantificational DP *every city* takes wide scope over the DP that contains it (namely, *one person from* _). Furthermore, the embedded quantifier *every city* can also bind the pronoun *it*, despite the fact that the quantifier does not c-command the pronoun. The second and third examples illustrate analogous behavior for a postnominal possessive and a prenominal possessive.

On the standard Quantifier Raising approach to scope-taking (Heim and Kratzer 1998, Büring 2004), quantificational DPs are generally prohibited from raising out of their container DP. In the case of (non-possessive) prepositional modifiers, as in (14a), the preposition can arguably project clausal structure that could provide a suitable adjunction site within the DP for the quantifier to raise to (Heim and Kratzer 1998: section 8.5). This strategy is not available for prenominal possessives; thus Heim and Kratzer (1998: 231) and Büring (2004: 32) provide a type-shifting rule to deal with (14c).

The ability to bind a pronoun without c-commanding it is a separate problem from inverse scope. Ruys (2000:517) offers the following generalization: if A can bind B, and A contains C, and C can take scope over B, then C can bind B. Thus in (14c), A is the subject DP *every celebrity's siblings*, and B is *her*. The subject can certainly bind a pronoun in the verb phrase. Since the subject contains *every celebrity*, and since *every celebrity* can take scope over the pronoun (through whatever mechanism allows inverse scope), Ruy's generalization explicitly permits the embedded quantificational DP to bind the pronoun. In other approaches to scope-taking (e.g., Barker & Shan 2008), both inverse scope and binding without c-command fall out without any

type-shifters specific to inverse scope, and without any stipulated generalization such as Ruy's.

6.1. **Narrowing.** Barker (1995: 139) observes that quantificational possessors automatically restrict quantification to only those elements that stand in the relevant possession relation with some possessee.

(15) Most planets' rings are made of ice.

Only planets that have rings are relevant for the truth of (15). This sentence can be true in a solar system in which two of the three planets that have rings have rings made of ice, even if only three planets out of eight even have rings in the first place. (If you're tempted to read *planets' rings* as a compound, insert an adjective: *most round planets' rings*.) It is as if the sentence had been *Most planets that have rings' rings are made of ice*. Barker named this phenomenon NARROWING.

It is possible that narrowing is a kind of accommodation (Lewis 1979): the listener pragmatically enriches the descriptive content of the possessor in recognition of the apparent intentions of the speaker ("Apparently", reasons the listener of (15), "the speaker intended to talk only about those planets that have rings"). If so, narrowing is a particularly automatic and exceptionless type of accommodation. Furthermore, narrowing is associated specifically with possessives:

(16) Most planets have rings made of ice.

Unlike (15), the truth of (16) does seem to be sensitive to the status of planets that don't have rings, despite the fact that the relation denoted by *have* is similar to the possession relation involved in (15). Presumably whatever makes narrowing automatic in (15) but not in (16) is specific to the syntax and semantics of the possessive construction in (15). Peters and Westerståhl (2006: chapter 7) provide an account on which narrowing is built into the truth conditions of the possessive construction.

7. Thematic roles

It is commonplace (notably Chomsky 1970, Szabolcsi 1983, Abney 1987) to observe that there are rough correspondences between the syntax and the semantics of sentences on the one hand and of DPs on the other. This is seen particularly clearly in derived nominals: compare *The Romans destroyed the city*, in which *the Romans* is the subject, versus *the Romans' destruction of the city*, in which *the Romans* is the possessor.

The argument structure of derived nominals depends closely on the verbs they are derived from, though with many syntactic wrinkles. Similarly, the thematic roles of derived nominals reflect those of the verbs they are derived from (though perhaps not always; see Barker 1998a). Underived relational nouns, however, do not lend themselves to categorization in terms of verbal thematic roles. Instead, Barker & Dowty (1993) suggest that the nominal system has its own thematic role system more appropriate for the job of describing entities (rather than events). Instead of thematic roles that categorize participants in terms of their place in the causal chain (Agent, Instrument, Patient, etc.), nominal roles categorize participants in terms of their mereological properties, where a possessor is the Whole and the possessee is the Part: *the country's coastline*, *the table's leg*, *the beginning of the story*.

The part/whole opposition must be somewhat abstractly extended to conceive of properties as metaphorical parts of the objects that possess them (*speed*, *color*, *taste*, *age*). According to Moltmann (2006), the referent of, e.g., *the redness of the apple* is a trope, and quite literally a part of the apple: the part of the apple that instantiates the *red* universal, with concrete existence independent from all of the other properties of the apple.

See also article 18 *Thematic roles*.

7.1. **Non-invertibility of relational nouns.** Evidence in support of the part/whole proto-role theory comes from the non-invertibility of relational nouns. In the verbal domain, thematic roles correlate strongly with grammatical relations. For instance, the subject participant is typically at least as high on the causal chain of events as the direct object participant, so that we have *John killed Mary*, or *The printer printed the paper*, but never the reverse. That is, there is no (morphologically simple) verb **blick* such that *The paper blicked the printer* means "the paper was printed on by the printer".

Just so, relational nouns that express a part/whole relationship invariably assign the possessor participant to the whole, and the possessee to the part: in *the coastline of Chile*, Chile is the whole and the coastline is the part, and indeed Chile is the possessor and the coastline is the possessee. Likewise, for relational nouns expressing the relationship between an entity and one of its qualities or properties, the entity will be expressed as the possessor, and the property as the possessee, e.g., *the speed of the car*, *the shape of the apple*.

There is, of course, a prominent class of relational nouns for which the part/whole opposition is not relevant, namely, family terms (*brother*, *cousin*, etc.). As a result, argument linking is unconstrained, and the

prediction is that these lexical items are invertible: there may be pairs of relational nouns that express perfect or near perfect inverses of each other. Thus we have inverse pairs such as *parent/child* and near-inverses such as *uncle/nephew*, which differ only in which element of the relation is entailed to be male (the older member or the younger).

Langacker (1992) also aims to explain the limited invertibility of possessive constructions. He suggests that this pattern derives from the conceptual function of possessives, which is to guide the attention of the listener to a specific described entity by moving from the possessor, a familiar anchor (the "landmark") by means of the possession relation to the target referent (the "trajector"). (See article 27 *Cognitive semantics: and overview.*) In this way, the possessive allows the listener to arrive at mental contact with the intended entity. The part/whole asymmetry follows: it is natural to direct attention to a specific body part by first referring to the whole in which the part finds itself, so we have *the dog's tail*, moving our attention from the dog to the named part; but it is unnatural to have identified a subpart without yet having identified the whole that contains it. That is why we would be unlikely to describe Rex as *that tail's dog*, and so we never have relational nouns that lexicalize a part/whole relationship where the possessor is the part. (We do have *the tail's owner* or *the tail's possessor*, which can be used in those rare circumstances in which we do need to move from identification of the part to identification of the whole, but these do not constitute counterexamples, since they do not express relationships that are entailed to be part/whole relationships: *the stick's owner* does need not refer to an object of which the stick is a part.)

8. Bare possessives

In some situations, the NP possessee constituent of a possessive can be elided to form a bare possessive (*John's*, *the man's*). Comparatives often license bare possessives ([speaking of dogs] *John's is bigger than Mary's*). In a neutral context, bare possessives often refer to homes (*Let's go to John's*). English has special morphological forms for bare possessives formed from personal pronouns (e.g., *mine*, *yours*, *ours*). Partee (1997) and several papers of Partee and Borschev (especially Partee & Borschev 2001) discuss bare possessives.

9. Double genitives

Double genitives are so-called because they appear to contain both the genitive *of* and a possessive clitic:

(17) a. a friend of John
b. a friend of John's

The DP in (17a) is a plain postnominal possessive, and (17b) is a double genitive.

Barker (1998b), following work of Jackendoff (e.g., 1968), argues that the double genitive is a kind of partitive construction, and not a true genitive at all. As noted by Jackendoff, standard partitives and double genitives both exhibit an anti-uniqueness effect:

(18) a. the one of John's books *(that I like the best)
b. the book of John's *(that I like the best)
c. the friend of John's children (that I like the best)

Like the standard partitive construction in (18a), the double genitive in (18b) is only compatible with the definite determiner if there is a relative clause (or some other form of restrictive modification) that renders the partitive or the double genitive unique. In contrast, the normal postnominal genitive *of* in (18c) can co-occur with the definite determiner whether or not there is further modification.

If the *of* in the double genitive is not the possessive *of*, this also explains why it is compatible with sortal head nouns (e.g., *a stick of Bush's/*Bush*); why it can co-occur with a prenominal possessive (*my favorite book of Mary's/*Mary*); and why it can express pragmatically-controlled possession relations: *a picture of John's* can be a picture that John owns, one that he holds in his hands, etc., but *a picture of John* can only describe a picture that depicts John.

Barker concludes that the *of* in (18b), like the *of* in (18a), is the partitive *of*, not the possessive *of*. Then *a friend of John's* is analyzed as *a friend of*$_{part}$ *John's (friends)*, roughly paraphrasable as 'one friend out of the set of John's friends'. The anti-uniqueness effect is explained in standard partitives and in double genitives by assuming that partitivity is always proper partitivity, that is, that *of*$_{part}$ *DP* must denote a property whose extension contains more than one entity. The proper partitivity hypothesis has been challenged by Ionin et al. (2006).

10. Plurals and dependent plurals

Possessives sometimes resist an interpretation that distributes possession across a set of possessors.

(19) a. The cream is now part of many men's grooming routine.
b. ?This parking lot contains many men's car.

In (19a), the men in question need not have identical grooming routines. That is, the possession relation relating each man to his grooming

routine distributes over the set of men. In (19b), however, for some reason, a reading on which each relevant man possesses a different car is difficult or impossible.

Perhaps relatedly, Zweig (2007) points out that possessives in some languages, including English, can have dependent plural readings.

(20) a. This bike has wheels.
b. These unicycles have big wheels.

The plural on *wheels* entails that the bike in (20a) has more than one wheel. But (20b) has an interpretation on which each unicycle has only one wheel, though there must still be more than one wheel in the overall situation. On this interpretation, the plural *big wheels* depends on the plural *These unicycles*.

(21) a. This woman's husbands are annoying.
b. These women's husbands are annoying.

Similarly, the plural on *husbands* in (21a) guarantees that the woman in question must have more than one husband. But in the possessive in (21b), although there must be more than one husband in the overall situation, there need not be more than one husband per woman. Thus the plural *husbands* depends (in the relevant sense) on the plural *these women*.

11. Some related topics

In this article, I have concentrated on nominal constructions. Naturally, there are several ways in which possessive constructions and possessive meanings can interact with verbal argument structure. There is a rich literature on nominalizations (*the Roman's destruction of the city* and gerunds (*John's singing in the shower*), notably including Chomsky (1970) and Grimshaw (1990).

There is likewise a rich literature on the syntax of sentences in which the main verb can have a possessive meaning. That is, many possession relations can be expressed using the verb *have*: *John's friend* $\sim$ *John has a friend*; *John's cloud* $\sim$ *John has a cloud*, though not all: *John's sake* $\not\sim$ **John has a sake*; *the pub's vicinity* $\not\sim$ **the pub has a vicinity*.

Possessors play an active role in the syntax of many languages. Many languages have possessive constructions in which the possessor appears as a direct argument of the verb. Sometimes known as possessor raising or possessor ascension (e.g., Aissen 1990), these constructions are also known as external possession constructions (Payne and Barshi 1999). Some flavor of these constructions can be perceived by comparing English *John touched Mary's arm* versus *John touched Mary on the arm*.

Szabolcsi (1983) is an influential theory of a type of possessor movement in Hungarian.

Possessives play an important role in Keenan & Stavi's (1986) classic study on the class of quantifiers expressible by natural language DPs. See article 43 *Quantifiers*.

Partee and Borschev have a series of papers discussing the semantics of the Genitive of Negation in Slavic, with particular attention to Russian. With certain verbs, arguments that show nominative or accusative case in affirmative contexts can appear in genitive case in the presence of negation. On their analysis, the Genitive of Negation involves denying the existence of some entity with respect to a specific location.

Some bibliographic notes: Partee 1997, an important and highly influential analysis of the possessive, first circulated in manuscript form around 1983 (though my attempts to get hold of a copy in 1990 were not successful). My 1991 dissertation, published in 1995, provides a general introduction to nominal possessives and relational nouns. Taylor (1996) and Heine (1997) are book-length treatments in the Cognitive Grammar tradition. There is a literature in French, discussed in Dobrovie-Sorin (2000a) with special attention to the contributions of Milner. Peters and Westerstål (2006: chapter 7) covers much of the same ground as this article from a different point of view, and Coene and d'Hulst (2003) and Kim et al. (2004) contain a number of studies discussing the syntax and semantics of possessives. Some works specific to possessives are available at `semanticsarchive.net/links.html`*, notably bibliographies and other resources compiled by Yury Lander and by Barbara Partee.*

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