ALIGNMENT OPTIMALITY AND ENGLISH POSSESSIVES: KNOWING WHERE TO STOP

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Abstract: The present paper[1] argues that an Optimality Theoretic framework may better handle the order of appearance of elements inside what is traditionally termed a possessive NP in English than approaches embedded in X-bar Theory. The syntax and semantics of examples of the type *book of Frank, Frank's book, book of Frank, the man living next door's bike* and *the bike of the man living next door* are examined. It is concluded that the terms "possessive" or "genitive", "possessor", "possessed" are in fact labels used for certain contextually dependent relations, that is to say, they mark elements participating in, and the relationship itself of, what nominals may enter with each other. This "freedom of relation" also includes the actual, true possessive relation as well, and markers (different morphemes) appear at boundaries between a "possessor" and a "possessed" to indicate where one ends the other begins.

Key words: alignment syntax, conceptional units, freedom of choice for the possessive relation, Nominal Domain, Possessive Domain

1. Introduction

The aim of this paper, as part of a larger scale project, is to demonstrate that a specific branch of Optimality Theory, Alignment Syntax, has a promising future in accounting for the complex behaviour of possessive constructions in English and that with the mechanisms of a grammatical system like it a cross-linguistic typology of the shapes and sizes of possessive constructions may be established.

Possessive constructions have long been a target of investigation and there are certain issues regarding their structure that are still unresolved. One such issue concerns e.g. the structural position of full DP vs. pronominal possessors. Some argue that they at least originate in the same structural position (cf. den Dikken 1999 in Bernstein and Tortora 2005) while others propose that not only are they morphologically distinct, they are base-generated under different nodes in a tree (cf. Bernstein and Tortora 2005 and Kayne 1993 in Bernstein and Tortora 2005). Another such issue concerns the status of double gentitives and possessive partitives and whether their structure is essentially equivalent (cf. Storto 2000, Asarina 2009, Lzons 1986). The present paper attempts to argue that such questions may be avoided entirely once a theoretical framework not reliant on structure is adopted. Yet another serious issue raised by the nature of possessive constructions in English is contextually dependent interpretations, which include a possessive relation expressions such as e.g. *book of Frank's* or *Frank's book*

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allow. In line with the basic general assumptions of Alignment Syntax it is possible to find a way round that problem as well.

The structure of the paper is as follows. Section 2 offers a quick thumbnail guide to Alignment Syntax including the main set of assumptions and simplified sample analyses. Section 3 introduces the data in detail and describes the application of the relevant alignment syntactic notions of input, CUs, candidates, domains, and constraints in the context of possessive expressions. Section 4 presents the actual analysis while section 5 contains concluding remarks and directions for future research.

2. Alignment Syntax: A quick guide

Alignment Syntax (AS) is a version of Optimality Theoretic approaches to syntax. It is an input – output based system, where the various components include the input elements, a component called GEN that organizes the input elements into ordered strings (or sequences, i.e. candidates), and a set of constraints which evaluate the candidates and select the optimal output.

The input elements are so-called "Conceptional Units" (CUs), abstract elements which are organized into ordered sequences by the grammatical system and, in turn, are spelled out by vocabulary items[2]. The basic types of CUs proposed are those that represent descriptive semantic content, i.e. the so-called "roots", and those that carry more functional content, functional CUs. There is a third type included, however, so-called thematic type functional CUs, which license related arguments by providing an anchor for arguments to be aligned to and which themselves are aligned with respect to the root. Section 3.2.1 will return to a more detailed description of CUs. These are the CUs manipulated by the grammatical system and various orderings are created.

2.1 The components

- The input: it consists of roots, functional CUs, a specification of the semantic relationship between them, that is, which root is associated with which functional CU;
- GEN: the input elements are arranged by the general syntactic processor, various orderings are imposed on them and a candidate set is created;
- The grammatical system: the units the grammatical system ('syntax') manipulates compete with each other for positions defined with reference to other units in terms of linear ordering; the grammatical system contains constraints (statements about well-formedness), which are of three types, alignment, anti-alignment and faithfulness constraints:

(i) Alignment constraints: Target precedes host: t*P*h (x*P*D) (non-gradient, i.e. absolute) / target follows host: t*F*h (x*F*D) (non-gradient) / target is adjacent to host: t*A*h (non-directional, gradient); an alignment constraint that is evaluated with respect to a single point, be that a specific point or an edge of a domain, is gradient, whereas an alignment

[2] The set of CUs is assumed to be universal and the input for a given expression is assumed to be taken from that universal set.

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constraint evaluated with respect to a stretch of an expression, e.g. a domain, is non-gradient.
(ii) Anti-alignment constraints: Target is not adjacent to an edge of the host: x*PD (violated if x precedes every member of a domain)
(iii) Parse: Input elements are not visible in the output. Targets and hosts can be single input elements or sets of input elements termed domains. The ranking of the constraints for any target and host will decide on the optimal position of the two relative to each other, while adjacency is satisfied regardless of order. Domains are defined over sets of input elements which share a given property, e.g. all the input elements related to a root predicate can constitute a domain in which member and non-member elements are aligned; domain adjacency is the same as element adjacency except the domain as a whole functions as a host, e.g. the domain of a wh-element is the set of input elements which it has scope over (this can be defined as the head of the interrogative, a predicate and all its dependents), thus in 'who likes whistling' the domain is {likes, who, whistling}; ordering with respect to a domain means preceding or following every element of the domain (in other words, being the first or the last element inside the domain); adjacency with respect to a domain is a general requirement that a target avoid being surrounded by the domain, thus the target will aim at appearing at one of the edges; being adjacent to a domain is being adjacent to its edges, where order, i.e. whether it is the left or right edge of the domain, is irrelevant.
• Evaluation: the candidate set is evaluated by the relevant constraints, and the optimal candidate is the one violating the lowest-ranked constraint or the one incurring the lowest number of violations on a gradient constraint if two (or more) candidates fare identically; if certain constraints are not ranked with respect to each other and are violated by different candidates, which otherwise draw on the constraints, optionality arises.

2.2 A sample analysis

A simplified and slightly modified demonstration taken from Newson and Maunula (2006) is presented below to illustrate the working mechanism of precedence constraints in Alignment Syntax. In English wh-elements prefer the first position in a clause. Objects, on the other hand, prefer to follow the verb immediately. Two constraints can be formulated: wh$P$D (wh > Do), i.e. 'wh-element is first in wh-domain' (as mentioned above, that is defined as the set of elements the wh-element has scope over) and ob$F$v (v – obj), i.e. 'object follows verb'. The examples in (1) show the candidates for a clause containing multiple wh-elements and (2) shows the competition. * means a violation of a given constraint, *! means that the candidate is no longer in competition, i.e. it has been 'killed off'. The candidate set (part of it) is shown in the column on the left while the constraints are in the row on top. The pointing finger shows the optimal candidate.

(1) a. who what saw
b. what who saw
c. who saw what
d. what saw who
e. saw who what

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f. saw what who

(2)

	wh > Do	v – obj
who what saw	*	*!
what who saw	*	*!
☞ who saw what	*	
saw who what	**!	

In tableau (2), with the first two candidates, one of the wh-elements satisfies the higher-ranking constraint the other does not, hence there is one mark for violation but since the verb is last there is a violation of the lower-ranking constraint as well. The third candidate also violates wh*P*D because only one wh-element can be the first of the two but it does not violate ob*F*v. The fourth candidate demonstrates that with the remaining candidates if the verb is first there are two violations for wh*P*D, one for each wh-element.

3. Possessives

As is well-known, in English there are two types of possessive constructions, one with a prenominal possessor marked with *'s* and a postnominal possesssor expressed by a Prepositional Phrase headed by *of*. The possessors themselves can be expressed by full DPs or so-called possessive pronouns and determiners. In what follows these constructions are considered in detail within an alignment syntactic framework.

3.1 The data[3]

In (3) the type of expressions examined are shown:

(3) a. Frank's book / (the/a) book of Frank's / (the/a) book of Frank
b. the man living next door's bike / the bike of the man living next door
c. his book / (the/a) book of his / (the/a) book of him

3.1.1 Interpretation

There are (at least) two salient issues raised by the interpretation of possessive constructions. First, how can any system handle the fact that the interpretation of a possessive sequence is often contextually defined in the sense that e.g. with *Frank's book, (the/a) book of Frank's*, both can be interpreted as ambiguous regarding the exact nature of the relationship between the possessor and the possessed. Thus, as is generally assumed, with the exception of *(the/a) book of Frank*, the other sequences in (3a) can mean that 'Frank wrote a book, bought a book, got a book, etc…' And they can also

[3] It must be noted that for the time being there are no differences considered between the various types of nouns e.g. relational nouns like *friend*, or *picture*-type nouns, etc.

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mean that 'Frank has a book' (cf. Lyons 1986, Peters and Westerståhl 2013). The same variation is exhibited by the versions containing possessive determiners or pronouns in (3c), where the one containing the objective form unambiguously means that the book is on/about Frank/him. Second, the question whether there is a meaning difference between expressions containing prenominal or postnominal possessors or not also frequently arises.

Regarding the former issue, as discussed in detail by Peters and Westerståhl (2013), it may be assumed that possessives have a characteristic that helps distinguish them from other constructions, one being the freedom of the possessive relation in both the prenominal and the postnominal possessive expression.[4] That is, if the relation is fixed between the nominal preceding *'s* and the one following it or between the DP following *of* and the nominal preceding, it is an indicator that the expression is not a possessive, e.g. *the museum of trains, a salad of thirteen vegetables* (p. 27). Still, the absence of *'s* does not necessarily mean that there is no possessive relation involved, e.g. *a desk of the first U.S. president* (p. 8). They further note that examples like *a brother of John / John's* have the same range of meaning for both forms, which is in line with Lyons (1986). Thus, for Peters and Westerståhl (2013) the very distinguishing feature of possessives is 'freedom of choice for the possessive relation', available both for prenominal and postnominal possessives.

> FREEDOM: every possessive DP can be used in a sentence S in a context where that DP's possessive relation is none of the options provided semantically by S but instead comes somehow from the context in which the sentence is used (Peters and Westersthål 2013: 29).

Lyons (1986) also points out that if the reading of the construction is determined by context only the so-called "double genitive" form may occur.

Thus, it seems that it is a defining feature of possessive sequences that they allow for a freedom of interpretation in terms of the exact meaning of what is expressed by the possessive relation. In this sense, then, the term "possessive" is just a label inasmuch as it refers to the possessive relation as well as other instantiations of the way two nominals may be related.

As to the meaning difference between expressions containing prenominal or postnominal possessors, it is generally assumed that expressions like *John's bike* and *(the/a) bike of John's* mean the same. Again, Lyons (1986) points out that certain relational nouns such as *brother, friend* and body parts are grammatical in the second frame only with a full DP and ungrammatical with an objective-case marked pronoun:

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[4] There is a second, related to the assumption Peters and Westerståhl (2013) make, namely that possessives always involve quantification over possessions, which can be universal, existential or given by a generalized quantifier. For example:

(i) Mary's dogs are all penned up.

(ii) When Mary's dogs escape, the neighbours catch and return them. (p 5)

In both examples the quantification over possession is implicit, in (i) it is universal and in (ii) it is existential. Thus, a general characteristic of a quantified possessor DP is that its scope is always wide enough to include the possessive relation. That is assumed to be a consequence of the fact that in order for a possessive DP to quantify over sets of possessions, the possessor must be specified first as a prerequisite for it to quantify over possessions. The details of the nature of that quantification do not concern this paper, however.

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(4) a. the brother of Mary
b. *the brother of him
c. the hand of a man
d. *the hand of him

According to Peters and Westerståhl (2013), while prenominal and postnominal possessives differ in syntactic structure, they are remarkably similar semantically, e.g. in both quantification over possessions is observed, both exhibit the freedom of the possessive relation, both permit virtually any noun to be the possessed noun and allow a very wide range of DPs as possessors, and practically any expression employing one sequence has a counterpart employing the other, where the meaning of the counterparts shows no or very little difference.[5]

3.1.2 What is not included

It must be noted that the present paper does not include an analysis of so-called descriptive (classifying) genitives such as *women's magazines* as these have a fixed interpretation of the relation between the two nominals and if a postnominal version is used (*magazine of women*) the reading yielding that descriptive interpretation disappears. As noted by Peters and Westerståhl (2013), the descriptive genitive is syntactically better grouped with premodifying attributes.

Also, with postmodifying possessors the issue of whether they are partitives or not often arises, which, again, lies beyond the scope of the present paper. Peters and Westerståhl (2013) (and others, e.g. Lyons 1986, Storto 2000, Asarina, 2009) argue that possessive partitives and double genitives should be kept apart.[6]

At this point the distinction between alienable and inalienable possession is not brought into the discussion either.

Finally, the debate on whether or not possessive DPs are always definite is not yet included either (cf. Jackendoff 1977, Storto 2000, Asarina 2009, Peters and Westerståhl 2013).[7]

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[5] Lyons (1986) provides examples of when it is not possible to have counterparts, e.g. *?the mountain's foot, ?the ceiling's colour*, or see section 3.1.2 for additional examples.

[6] To illustrate the matter, consider (i) and (ii) below.

(i) some dogs of John's
(ii) some of John's dogs

In (i) the construction is what is traditionally termed a double genitive and in (ii) a possessive partitive.

[7] For instance, in Peters and Westerståhl (2013:23) it is pointed out that e.g. a sentence like *Two of the ten boys' books are missing* is ambiguous in three ways: one interpretation says about two of the boys that each one's books are missing (*two* quantifies over *boys*). The other two interpretations arise if *two* quantifies over *books*, thus two books or twenty books can be missing, depending on whether a partitive or a possessive reading obtains.

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3.2 The assets

Before the demonstration of how it is possible to account for possessives, a few preliminary assumptions must be made regarding the nature of the input elements and the definitions of domains.

3.2.1 The input CUs

So, how is the input defined for an expression like *(the/a) book of Frank's* and how does that differ from the input for *(the/a) book of Frank*? To answer this, a characterization of the morphemes *'s* and *of* is in order. As mentioned above, in Alignment Syntax (Newson 2010) there are so-called roots (CUs, abstract elements) representing semantic content, functional CUs and so-called thematic type functional CUs, which have related arguments that they license by providing something the arguments can be aligned to. These CUs themselves are also aligned in relation to the root. As they are mostly not realized independently, it is assumed that as a rule they are placed close to the root and often get spelled out by the root itself. The output of the system is a linear string of input CUs void of syntactic or morphological structure, thus the assumption is that it is vocabulary insertion that groups the CUs into bundles that can be spelled out by vocabulary items (Halle, M and Marantz, A. (1993) in Newson (2010)). There is an economy condition on vocabulary selection: if a given number of contiguous CUs can be spelled out as one single vocabulary item then that should be used instead of two separate ones but, of course, only contiguous CUs can be spelled out as one. In Newson (2010) it is further assumed that vocabulary insertion is best envisaged as root-based: the process looks at the roots and considers the largest number of contiguous features around them that can be spelled out by a single vocabulary item. If there are remaining functional CUs, those are spelled out by separate vocabulary items. The example in Newson (2010) is the following: if in a language the features [tense] and [possessive] are contiguous then that language has a possessive verb, e.g. English *have*. If they are not, the two features will be spelled out separately and the language will lack such a possessive verb. It will, instead probably rely on some form of *be* to spell out the [tense] feature coupled with some additional way, possibly a preposition or postposition, to spell out the [possessive] feature.

It is also possible to spell out a thematic root CU and a thematic type functional CU such as |free| or |poss| as one vocabulary item e.g. in *for goodness' sake*, *the lenses' size*. In these spelling has a convention of indicating the presence of the thematic type functional CU but there is no difference in pronunciation between the root CU and the root CU – thematic type functional CU either in the case of the singular noun or the plural noun.

In the literature *'s* and *of* have been identified as a number of different elements, e.g. *'s* has been taken to be a genitive case marker, the manifestation of genitive case, an edge clitic, while *of* a preposition responsible for assigning genitive case. But *'s* has also been taken to be a case marker and *of* a signifier that gentitive case has been assigned, etc…

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In the present paper they are taken to be relators providing a means of spelling out a free, contextually determined semantic relationship between two nominal sequences, where that free relation includes possession. The difference is that *'s* is a bound morpheme that has to appear attached to some host whereas *of* is a free morpheme. A further difference is that the meaning of *'s* is associated with the free interpretations (which include the possessive relation, too) or only the possessive interpretation but, as noted by Kayne (1994), and Peters and Westerståhl (2013), there are other manifestations of *of*, as in e.g. *two pictures of Mary of John's* (Kayne, 1994:85), where only the second item is interpreted as possessive *of*. Similarly, in *(the/a) book of Frank* it is not a possessive *of* which is present, which actually amounts to saying that the *of* is not inserted to spell out the possessive feature, it encodes a different relation, i.e. that the pictures depict Mary. If the German equivalent of English *(the) book of Frank* is considered, *(das) Buch von Frank*, that is not ambiguous in this respect since to express the interpretation that the book is about Frank the preposition *über* is used[8]. However, with *von* this expression also displays meanings which are defined by the context. Finally, it must be noted that *'s* is taken to be a CU that has an association with the possessed whereas *of* is a CU that has an association with the possessor.

For the time being the analysis starts off with examples that do not include articles or any other determiner. The input for a sequence like *book of Frank's* contains semantic CUs that can be spelled out by *book* and *Frank* as well as a semantic type functional CU that carries the feature freedom (of interpretation), which is spelled out by *'s* and *of*. The question arises as to whether it is *'s* or *of* or both simultaneously that spell out the possessive feature. Unfortunately, the situation is far from straightforward, as illustrated by the examples below.

(5) a. book of Frank / him
b. book of Frank's / his
c. picture of Mary of John's
d. desk of the first U.S. president / *desk of the first U.S. president's
e. problem and the solution thereof
f. friend of Mary / Mary's
g. Frank's book

(5a) exemplifies the interpretation when no possessive relation is expressed, instead the book is about Frank or him, this is not an instance of freedom. In (5b) both *'s* and *of* appear and, indeed, the interpretation will depend on context and includes a possessive relation. In (5c) the first *of* spells out a feature that is interpreted as 'depicting Mary' and the combination of the second *of* and *'s* do not exhibit freedom, rather, they are strictly interpreted as spelling out a possessive relation. In (5d-e), again, there is no freedom of relation, *of* spells out a possessive relation without the presence of *'s*.[9] (5f) illustrates that, contrary to what is shown by (5a) and (5d), it is possible to obtain a possessive

[8] Of course, in English *about* is also available.
[9] Curiously enough in (5e) *of* is attached to the end of the pronominal.

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interpretation in two ways: with *of* and with *of … 's*. Finally, (5g) demonstrates the freedom of interpretation feature spelled out by *'s*.

As noted by many, the data is extremely complex. The present paper is considered to be a starting point and as such concerns itself with (5a-b) and (5f). What is left is to see how the various domains serving as targets and hosts may be defined.

3.2.2 The domains

As described in section 2.1 under (iii), for a wh-element the domain can be defined as the set of elements it has scope over. Similarly, a verbal domain can be defined in terms of the verb and its related arguments. With nouns, however, the notion "domain" may not fall out so elegantly, simply because nouns (with a few exceptions, e.g. deverbal nouns), are in general assumed not to have an argument structure.[10] Literally any noun, however, can appear with *'s* and *of*, the two not necessarily expressing a possessive relation but when interpretation is free, that meaning is also included. Thus, the term possessive relation seems to comprise some relation between nominals not necessarily possessive.

That there must be a nominal domain, or rather, that a nominal domain can indeed be defined is shown by classic types of examples used in Binding Theory.

(6) a. Frank_i hates any picture of himself_i
b. $\text{Frank}_{j/*i}$ hates John_i's picture of himself_i

In (6b) the appearance of the possessor delimits the binding domain, the possessor seems to be some kind of demarcator or divider.

In the present work four types of domains are proposed: the Nominal Domain (ND), which includes some noun and all the elements semantically associated with it, where those semantically related sets may constitute domains themselves; the Possessive Domain (PD)[11], which includes possessor, possessed and relation markers like *'s* and *of* and which is further divided into subdomains; the Possessor Subdomain (PRS) containing the possessor and its modifiers; finally, the Possessed Subdomain (PDS) containing the possessed and its modifiers. As an illustration, consider (7):

(7) a. all Frank's heavy books
b. the man living next door's bike

[10] As noted by Abney (1987), clauses must have subjects but nouns need not be accompanied by a possessor.

[11] Peters and Westerståhl (2013) propose that possessive constructions always involve quantification over possessions, which can be existential, universal or given by a general quantifier. A possessive DP always has quantification over possessions (Q_2) but what Q_2 quantifies over depends on a possessor, which has to be identified first. That is to say, a quantified possessor DP will invariably have a wider scope than the possessive relation. Thus, it would be tempting to establish the Possessive Domain as a quantificational domain. However, it is not at all clear how that could be done given that in order for possessions in a possessive DP to get quantified over the possessor must be identified first and given the linearity of the sequences it is apparent that in the case of postnominal possessors they are identified last.

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In (7) the Nominal Domains are the whole sequences, the possessive domains are *Frank's heavy books* and *the man living next door's bike* (i.e. in (7b) the ND and the PD coincide), the Possessor Subdomains are *Frank* and *the man living next door* while the Possessed Subdomains are *heavy books* and *bike*.

It must be noted that the above characterisation of domains is a departure from Newson and Maunula (2006) and Newson (2010) as there are subdomains established within a domain since the Nominal Domain can contain domains as well as elements that are not part of any subdomain, but are included in the bigger domain nevertheless. Also, though the presence of subdomains within a bigger domain may create the impression that domains correspond to phrases, it must be noted that members of subdomains and domains can be mixed among themselves depending on the alignment conditions, for example in an expression like *Frank's heavy books have all been thrown out*, *all* is clearly part of the Nominal Domain but the ordering would suggest otherwise. Before the analysis is presented, the basic assumptions are recapitulated, candidate sets and constraints are introduced.

4. The analysis

In what follows the main assumptions of the present work within an Alignment Syntactic framework are enumerated, the candidate set is established and the constraints are introduced. Then how evaluation proceeds is described.

4.1 Main assumptions

- Literally any noun can be a possessor or a possessed and is marked as such in the input;
- inputs are CUs which are spelled out after the grammatical system, i.e. the constraints, have selected an optimal candidate;
- constraints are statements on the order of elements, the adjacency and anti-adjacency of elements and on faithfulness to the input.

Key aspects of the analysis:

- *'s* and *of* are associated with the CU 'freedom of interpretation', |free|, and the CU possessive, |poss|, or some relation other than possession but also specific, e.g. |about| ('depicting', etc…); in addition, *'s* is associated with the possessor and *of* with the possessed; when they are used to spell out a CU (or CUs), the Superset Principle applies, i.e. vocabulary items can be selected to spell out CUs only if they are specified for a superset of the features of those features that need to be spelled out, thus the best fit is the vocabulary item associated with the smallest superset of features that need to be spelled out (Caha 2008);
- the input for the expression *book of Frank's* consists of a CU [possessor], another CU associated with the feature [possessed], and both are also associated with another feature, [$free_{pr}$] and [$free_{pd}$];

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- only contiguous CUs can be spelled out, where the following counts as contiguous:

pr [free$_{pr}$] and / or pd [free$_{pd}$];

- the expression *a book of Frank's* is defined as a Nominal Domain inside some Event Domain (e.g. *Mary has read a book of Frank's*). The Possessive Domain is *book of Frank*, the Possessor Subdomain is *Frank*, the Possessed Subdomain is *book*.

4.2 Candidates and constraints

Thus, the input elements for *book of Frank's* are {[possessor], [possessed], |free$_{pr}$|, |free$_{pd}$|}, where the possessor and the possessed are domains themselves and one feature of each is associated with both of them. These are arranged in different orderings by the grammatical system. Since inputs are interpreted what is relevant is that the CU |free| does not actually contribute to the semantic interpretation of the sequence, but it does indicate that there exists some relation between elements inside the two subdomains. The possible arrangements of the candidates are shown in (8). For expository reasons the Possessor Subdomain is abbreviated "pr", the Possessed Subdomain is abbreviated 'pd' (pr=Frank, pd=book, |free$_{pr}$|='s, |free$_{pd}$|=of). It must be noted that members of these subdomains may not be grouped together, i.e. they do not form what would traditionally be called a "phrase".

(8)	a.	pr pd |free| |free|	|free| |free| pr pd
	b.	pd pr |free| |free|	|free| |free| pd pr
	c.	|free| pd |free| pr	|free| pr |free| pd
	d.	pd |free| pr |free|	pr |free| pd |free|
	e.	pd |free| |free| pr	pr |free| |free| pd

The possibilities above only exist as orderings generated by the grammar inasmuch as the subdomain containing the possessor and possessed thematic root and the thematic type functional CU |free| including a different ordering of the two features |free$_{pr}$| and |free$_{pd}$| can contiguously be spelled out in a given language. The constraints are shown in (9). Please note that these are constraints that participate in the evaluation of the data included here.

(9) a. *PRS A PDS: the Possessor Subdomain cannot be adjacent to the Possessed Subdomain. In effect this constraint will ensure that the two edges of the domains will not meet, i.e. that preferably some element will come between the two. As neither of nor 's are members of either these domains (but they are members of the Nominal Domain) they can be ordered in such a way that they do come between the edges of the two domains. This is yet another departure from the assumptions made in Newson (2010) as here a non-member of a given target domain can be adjacent to the outer edge of that domain whereas there linear orders and adjacency are defined only over members of the same domain. Thus, in

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the present approach domain edges are taken to have two sides, one inside and one outside the domain itself

b. PRS**F*ND: the Possessor Subdomain cannot be last in the Nominal Domain.

c. PRS*F*ND: the Possessor Subdomain is last in the Nominal Domain.

d. NM*A*PRS: the non-member is adjacent to the Possessor Subdomain. The effect of this constraint is to penalise any instance of a non-member of the Possessor Subdomain (which is by necessity inside the Nominal Domain and the Possessive Domain) appearing not on the outer edge of the Possessor Subdomain.

e. NM*A*PDS: the non-member is adjacent to the Possessed Subdomain. The effect of this constraint is to penalise any instance of a non-member of the Possessed Subdomain (which is by necessity inside the Nominal Domain and the Possessive Domain) appearing not on the outer edge of the Possessed Subdomain.

Non-members do not include domains.

4.3 Competition

The tableaux containing candidate evaluations for *Frank's book* and *book of Frank's* are introduced below. The input for the sequence *Frank's book* contains [possessor], [possessed] and one instance of |free$_{pr}$|. The six possible orderings, the candidate set, are depicted in the first column. The Nominal Domain is the whole expression and the Possessive Domain coincides with it. The candidates that do not contain contiguous CUs of the pattern <root$_{pr}$ |free$_{pr}$|> are not generated, they are included for expository reasons in (10a). Thus, under the assumptions made only the bold face candidates compete, they are shown separately in (10b).

(10) a.

	*PRS*A*PDS	NM*A*PRS	NM*A*PDS	PRS**F*ND	PRS*F*ND
☞ **pr |free$_{pr}$| pd**					*
pr pd |free$_{pr}$|	*!	*			*
pd |free$_{pr}$| pr				*!	
pd pr |free$_{pr}$|	*!		*		*
|free$_{pr}$| pr pd	*!		*		*
|free$_{pr}$| pd pr	*!	*		*	

b.

	*PRS*A*PDS
☞ **pr |free$_{pr}$| pd**	
pd pr |free$_{pr}$|	*!

In (10a) those candidates where the two domains are adjacent are ruled out by the highest-ranking constraint, *PRS*A*PDS. The remaining two candidates are spelled out as *Frank's book* and *book's Frank*, respectively. Both of them satisfy the constraint that

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requires the non-member to be adjacent to the Possessor Subdomain and both of them satisfy the constraint that requires the non-member to be adjacent to the Possessed Subdomain. However, the third, i.e. *book's Frank* violates the constraint that penalizes it if the Possessor Subdomain is last in the Possessive Domain. The first candidate violates the lower-ranking constraint requiring that the Possessor be last in the Nominal Domain but since this constraint is lower-ranked, the first candidate still ends up as the winner among the six. As it is assumed that there are only two candidates generated, the highest-ranking constraint decides between them, see (10b).

The expression is the same in Mandarin Chinese: *Zhāng sān de shū* ('Zhāng sān's book').[12] Under this view language variation may stem from constraint-reranking and the different vocabulary items spelling out the different CUs. Assuming that e.g. in French one of the vocabulary items that can spell out the CU |free$_{pr}$| is *de*[13], and assuming that it has to be of the pattern < |free$_{pr}$| root$_{pr}$ > the two candidates competing are the third, [pd |free$_{pr}$| pr] and the fifth, [|free$_{pr}$| pr pd], i.e. *livre de Frank* and *de Frank livre*, the winning candidate turns out to be the third.

Next, consider *book of Frank's*. The Nominal Domain can be something like *the book of Frank's*. As described above, the input contains [possessor], [possessed], |free$_{pr}$|, |free$_{pd}$|. The candidates shown in (8a-b), were they generated, would be ruled out by *PRS*A*PDS, thus they are not included. The competition between the remaining candidates is shown in tableau (11a). The two instances of |free| mean |free$_{pr}$| and |free$_{pd}$|, thus in the tableau one instance is *of* while the other is *'s*. The candidates could vary accordingly, thus the first two would theoretically be spelled out as *'s book of Frank* and *'s Frank of book*, respectively, which gives the reader an idea of what the others sound like. Again, candidates that do not contain contiguous CUs of the patterns <root$_{pr}$ |free$_{pr}$|> and <root$_{pd}$ |free$_{pd}$|> are not generated, they are included for expository reasons. Thus, under the assumptions made only the bold face candidates compete, competition is shown in (11b).

In (11a) the three candidates that would incur the same violations if they competed are *'s Frank of book*, *of Frank 's book* and *book of Frank's* (marked by the pointing finger).

(11) a.

		NM*A*PRS	NM*A*PDS	PRS**F*ND	PRS*F*ND
☞	|free$_{pr}$| pd |free$_{pd}$| pr	*!		*	
☞	|free$_{pr}$| pr |free$_{pd}$| pd		*		*
☞	|free$_{pd}$| pd |free$_{pr}$| pr	*!		*	
	|free$_{pd}$| pr |free$_{pr}$| pd		*		*
	pd |free$_{pd}$| pr |free$_{pr}$|		*		*
	pr |free$_{pr}$| pd |free$_{pd}$|	*!			
	pd |free| |free| pr	*!	*	*	
	pr |free| |free| pd	*!	*		*

[12] *Frank* is replaced by *Zhāng sān*.

[13] It is possible to assume a correspondence between English *of* and French *de*, cf. Baunaz (2011), Bernstein (2005).

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b.

		NM*A*PRS	NM*A*PDS
☞	**pd** |**free$_{pd}$**| **pr** |**free$_{pr}$**|		*
	pr |**free$_{pr}$**| **pd** |**free$_{pd}$**|	*!	

In (11b) neither candidate violates *PRS*A*PDS so it is not included. Given that both non-members are adjacent to the possessor in the first and only one is adjacent to it in the second, the first wins.

For an expression like *book of Frank* the input contains two nominals and a semantic type functional CU that expresses 'about' has replaced |free|. The Nominal Domain can be something like *the book of Frank* and the subdomains are retained although no possessive relation is involved, the 'aboutness' relation has to be established between the two subdomains. Thus, in this case the labels are kept as they contain the domains including the CUs linked by *of* but the relation is not freedom of interpretation, rather, it is fixed in the input. The six possible orderings are *Frank book of, Frank of book, of book Frank, of Frank book, book of Frank, book Frank of.* In essence there are two candidates competing fiercely, *Frank book of* and *book of Frank,* in the former the two domains are adjacent, see (12):

(12)

		*PRS*A*PDS	NM*A*PRS	NM*A*PDS	PRS**F*ND	PRS*F*ND
	pr pd |**about**|	*!	*			*
☞	**pd** |**about**| **pr**				*	

For instance, in Hungarian the first candidate can be spelled out with the "aboutness" feature, e.g. *Jónás könyv-e (book of Jonah),* if it is assumed that in Hungarian PRS**F*ND outranks *PRS*A*PDS.

For sequences like *his book* and *book of his* the evaluation proceeds similarly to those depicted in tableau (10b) and (11b) respectively. The input is somewhat different as one of the root CUs in the input do not specify an individual, rather, someone whose identity is not established. The features of [pr] and the CU for the |free| relation are spelled out as *his*. For *book of him* it is the features of the [pr] and the 'aboutness' feature that are spelled out in one word, *him*.

Finally, for sequences like *the man living next door's bike* and *the bike of the man living next door*, the Nominal Domains are the whole expressions, the Possessor Subdomain is *the man living next door* and the Possessed Subdomain is *bike*. In these cases the semantic type functional CU is the feature |poss|, which is manifested in two CUs, |poss$_{pr}$| or |poss$_{pd}$|. These CUs will appear contiguously with the possessor or the possessed and as inputs are interpreted the candidates similar to those shown in (10b) and those in (12) are in competition. Consider tableau (13). The four candidates spelled out are *the man living next door's bike, bike the man living next door 's, the man living next door bike of, bike of the man living next door*.

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(13)

	*PRS*A*PDS	NM*A*PRS	NM*A*PDS	PRS**F*ND	PRS*F*ND
☞ pr |poss$_{pr}$| pd					*
pd pr |poss$_{pr}$|	*!		*		*
pr pd |poss$_{pd}$|	*!	*			*
pd |poss$_{pd}$| pr				*	

The winning candidate is the first as that only violates the lowest-ranked constraint requiring that the posessor be last in the Nominal Domain. In the tableaux presented above, i.e. in (10), (11) and (12) the two lowest-ranked constraints have no influence on selecting the optimal candidate. If it is assumed that these two are not ranked with respect to each other then regardless of the violations there will be two optimal candidates: the first, which is *the man living next door's bike* and the last, which is *bike of the man living next door*.

5 Conclusions

The paper has set out to demonstrate that an approach that does not rely on structural notions and categories can in effect work better when approaching as diverse an expression as the possessive relation in English.

It has been demonstrated that the terms 'possessor' and 'possessed' are in fact labels used for a variety of relations between two sequences that may spell out arguments. With the expressions termed possessives there is a certain 'freedom of relation' referring to the fact that literally anything can be connected by a free, contextually dependent relation spelled out by morphemes traditionally called possessive and / or genitive and when the interpretation of such an expression is ambiguous, it does include such a relation among others.

When viewed from an alignment-syntactic point of view, the question of whether full DP and pronominal possessors occupy the same position simply does not arise and the others that do arise are successfully handled by the theory.

In English the free relation can be expressed by a certain semantic type of functional Conceptional Unit, which, in turn, may be spelled out in different ways, either with *of* or with *'s* or both, depending on the given expression. Thus, it seems that these two morphemes in actual fact serve to mark boundaries between domains, indicate where they begin and / or where they stop. This freedom of relation is manifest in languages other than English as well and cross-linguistic variation is provided on one hand by the different vocabulary items languages have at their disposal to spell them out. These vocabulary differences in spelling out contiguous CUs may provide a basis for establishing a cross-linguistic typology of expressing possession and the differences between isolating, agglutinating or inflecting languages may follow neatly from the properties of the system. The other way cross-linguistic variation is achieved is through constraint re-ranking.

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As mentioned above this is just the beginning, the tip of the icebeg, so to speak, and there is enormous room for future research, but current results seem to suggest that there is every reason to be optimistic about the explanatiory power of the present approach to grammar.

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