

Anaphoric Binding in Construction Grammar

Author(s): Paul Kay

Proceedings of the Twentieth Annual Meeting of the Berkeley Linguistics Society: General Session Dedicated to the Contributions of Charles J. Fillmore (1994), pp. 283-299

Please see “How to cite” in the online sidebar for full citation information.

Please contact BLS regarding any further use of this work. BLS retains copyright for both print and screen forms of the publication. BLS may be contacted via <http://linguistics.berkeley.edu/bls/>.

The Annual Proceedings of the Berkeley Linguistics Society is published online via [eLanguage](#), the Linguistic Society of America's digital publishing platform.

Anaphoric Binding in Construction Grammar¹

Paul Kay

University of California, Berkeley

Introduction

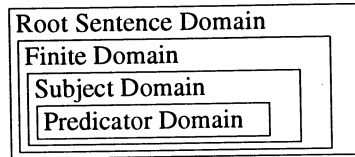
This paper will present the main outlines of an approach to anaphora within the Construction Grammar (CG) framework. The primary goal will be to sort out the universal, the language-particular and the lexeme-specific properties of individual anaphoric items. The basic idea is the following: in the domain of anaphora, universal grammar provides a fairly limited array of patterns or constructions. Individual languages select subsets of these commonly encountered patterns and combine them into more complex constructions. Finally, a language assigns each of its anaphoric elements a particular role in at least one, frequently more than one, anaphoric construction.

It is now widely recognized that there are not universally just two kinds of anaphoric elements: 'anaphors' which must find an antecedent (i.e., must be bound) within a specified local domain and 'pronominals', which must not find an antecedent (i.e. must be free) within that same domain. First, within a single language, the domain in which a bound element is bound need not be the same as the domain in which a free element is free; 'anaphors' and 'pronominals' do not in fact occur in strict complementary distribution. Secondly, anaphoric domains² vary across languages. Thirdly, anaphoric domains may vary across lexical items within a language. Fourthly, a single lexical item in a single language may have more than one associated domain: in particular the anaphor may be free in a narrower domain and bound in a wider one (See, e.g., Dalrymple 1993: 43 *et passim*). These insights come in large part from the work of Bresnan in the mid-eighties, partially in collaboration with Halvorsen and Maling.³ They are now represented to varying degrees in a wide range of theoretical approaches, for example in GB by Manzini and Wexler (1987), in HPSG by Pollard and Sag (1992) and especially in LFG by Dalrymple (1993), whose approach anticipates that presented here in important respects.

Domains

- The notion of anaphoric domain is informally illustrated in examples (1) and (2).
- (1) [a I_i think [b Joe_j relied [c on *him_j/himself_j/me_i/*myself_i]]]
- (2) [a I_i think [b Joe_j reached [c behind him_j/himself_j/me_i/*myself_i]]]

(3)



In (1) *him* may not be anteceded by *Joe*, while in (2) the reverse is true. This observation illustrates the fact that the meaning-bearing pronoun *behind* in (2) creates a minimal Predicator Domain in which an English pronoun such as *him* must be free, whereas the non-semantic (or 'case-marking') pronoun *on* in (1) does not. The minimal predicator domain containing *him* in (1) is therefore b, while in (2) it is c. Since *Joe* is within b but not within c, *him* is free of an antecedent in its the minimal predicator domain in (2) but not in (1).

The reflexive anaphor *himself*, unlike the ordinary pronoun *him*, may be bound by *Joe* in both examples. This observation illustrates the general fact that English reflexives must be bound, not in the minimal domain governed by a predicator, but in the minimal domain containing a subject. In both examples that nearest subject is *Joe* and the domain is therefore b.

In the diagram given in (3) we find that the box labeled Subject Domain contains the box labeled Predicator Domain. This reflects the fact that the minimal subject domain of an element will always contain (though not always properly contain) the minimal predicator domain of that element.

The pronoun *me* is bound in both examples by *I*. Since *I* is outside of b in (1) and outside of c in (2), it may antecede *me* in both examples.

The reflexive *myself* may not be bound by *I* in either example because the minimal subject domain for *myself* is b in both cases, and *I* falls outside b.

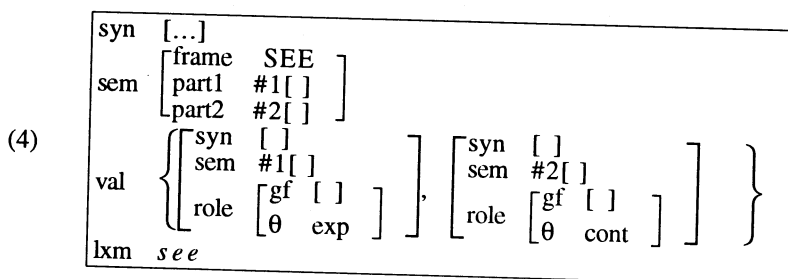
The minimal Finite Domain of an anaphoric element contains that element and the 'nearest' finite verb.⁴ In both (1) and (2), b is the minimal finite domain of the anaphor(s). The minimal finite domain plays no role in English, but it does in Norwegian, as we will see below. The minimal finite domain contains (although not necessarily properly) the minimal subject domain of any anaphoric element, as indicated in diagram in (3).

The Root Sentence Domain also plays no role in English, although it does in languages such as Marathi (Dalrymple 1993). To say that an anaphor is bound in its root sentence domain is only to say that it must have an antecedent in the sentence in which it occurs, though of course not necessarily in the minimal finite clause in which it occurs. An example of such an anaphor is Marathi *apaan* (Dalrymple 1993: 26). Of course the root sentence domain contains the minimal finite domain (though not necessarily properly), as indicated in (3).

Valence sets: the locales of binding domains

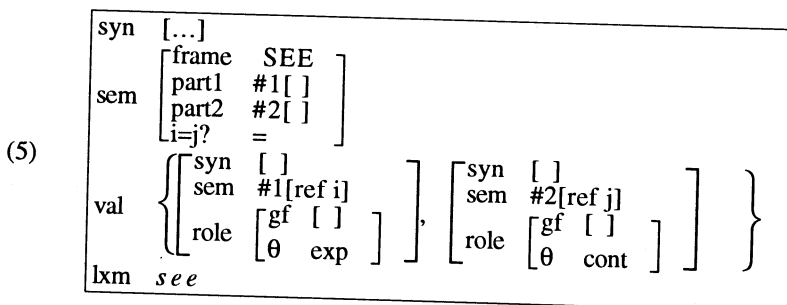
Binding domains are defined in GB in terms of constituent structures, in LFG in terms of functional structures, and in HPSG in terms of subcat lists⁵. In CG binding domains are defined in terms of valence sets. Valence sets may be briefly characterized as follows. The CG objects representing linguistic

constructions – and the words, phrases and sentences which they license (*constructs*) – are tree structures with feature structures (FSs) at the nodes. FSs encode a complex of information, including syntactic, semantic and relational information.⁶ Simple lexical entries take the form of structures of this type which consist of a single node⁷ with its associated FS. Lexical entries which represent predicates have a valence attribute. The value of the valence attribute is a set of FSs (the *valence set* of that lexical entry), each of whose members represents an argument requirement of the predicate.⁸ A member of the valence set of a predicate *p* is called a *valence element* of *p*. The CG notion of valence set corresponds roughly to the subcat list in HPSG or the semantic form in LFG. A valence set is illustrated for the lexical entry *see* in (4).



In (4) the unification variables #1 and #2 assure that the semantic values of the experiencer and content arguments of *see* (which will be respectively its subject and object arguments if *see* undergoes transitive linking) are unified with the values of the two participants in the SEE frame in the external semantic value.

Binding is represented within a valence set in CG, as illustrated in (5).



In diagram (5), the two argument requirements constituting the valence set appear with the referential indices *i* and *j*; a new attribute 'i=j?' appears in the external semantic value. In (5) this attribute has the value '=', indicating identity of the two indices, hence binding. Had this value been '≠', that would have recorded non-identity.

Valence embedding

So far we have illustrated binding only for the circumstance in which antecedent and anaphor are coarguments. This is not always the case. An example of an anaphor never bound by a coargument is Norwegian *seg*, discussed in a later section and illustrated in example (6) (repeated later as 23b).

(6)	Jon _i	hørte	oss	snakke	om	seg _i
	John _i	heard	us	talk	about	him _i

If antecedence is determined by valence membership but is not simply coargumenthood, what is it? Looking again at example (6) we see that the antecedent *Jon* is a valence member of *hørte* 'heard' and that the anaphor *seg* is a valence member of *om* 'about', which is a valence member of *snakke* 'talk', which is a valence member of *hørte*. Thus, the antecedent is a valence member of *hørte* and the anaphor is a valence member of a valence member of a valence member of *hørte*. We will want to say that *Jon* and *seg* are both *valence embedded* in the same domain, that of *hørte*, and that *Jon* is in some sense 'superior' to *seg*. We wish to develop a precise notion of valence embedding in order to define the superiority relation obtaining between antecedent and anaphor. The rough idea is that the antecedent is a valence member of some FS $[\pi]$ and the anaphor is a valence member of a valence member ... of a valence member of $[\pi]$.

We need a way to symbolize an arbitrary number of iterations of the relation 'is a valence member of'. Given two FSs $[\pi]$ and $[\alpha]$, we say that $[\pi]$ directly valence embeds $[\alpha]$, or equivalently that $[\alpha]$ is valence embedded in $[\pi]$ at depth unity, iff $[\alpha]$ is a valence member of $[\pi]$. We express this relationship with the symbol \ni . Thus,

$$(7) \quad [\pi] \ni [\alpha] \text{ iff } [\pi \text{ val } \{[\alpha]\}]$$

We can now use the Kleene star notation to express the idea that one FS is embedded in another at an arbitrary depth. Thus, (8) says that $[\alpha]$ is valence embedded in $[\pi]$ at an arbitrary depth, or, more simply, that $[\alpha]$ is valence embedded in $[\pi]$. If the Kleene star represents zero iterations of the material in its scope, $[\alpha]$ is simply a valence member of $[\pi]$; if the Kleene star represents one iteration, $[\alpha]$ is a valence member of a valence member of $[\pi]$; and so on.

$$(8) \quad [\pi \text{ val } \{([\] \ni)^* [\alpha]\}]$$

Anaphoric superiority

The superiority relation between antecedents and anaphors in CG holds between two FSs $[\alpha]$ and $[\beta]$ which (a) are valence embedded in the same FS $[\pi]$ and (b) obey a further, asymmetrical, condition. The first part of the asymmetry-inducing condition is that $[\alpha]$ must bear a thematic relation to $[\pi]$, while $[\beta]$ need not. Thus, $[\alpha]$ will either be a valence member of $[\pi]$ or a valence member of a non-semantic (case marking) preposition which itself is a valence member of $[\pi]$.

while $[\beta]$ may be valence embedded in $[\pi]$ at an arbitrary depth. If $[\beta]$ does not bear a thematic relation to $[\pi]$, this first part of condition b is sufficient to establish the required asymmetry. The analogy to non-mutual C-command is apparent, and also to the comparable non-coargument binding situation in HPSG's (non-local) O-command (Pollard and Sag 1992: 300) or in LFG's f-command (Bresnan 1982: 334; see also Dalrymple 1993: 155-157, who derives Bresnan's condition from the form of her (Dalrymple's) binding equations).

Anaphoric superiority among coarguments

What about the case in which $[\beta]$ does bear a thematic relation to $[\pi]$, that is, when $[\alpha]$ and $[\beta]$ are coarguments? In English, where the question has been studied in greatest detail, at least three classes of factors interact in complex ways to produce the asymmetric 'command' relation obtaining between antecedents and anaphors: linear precedence, relative obliqueness of grammatical function, and semantic factors, the latter perhaps not always assignable to a hierarchy of thematic relations. Pollard and Sag (1992) provide several examples in which relative obliqueness appears as the controlling factor. They, as well as many other authors, also recognize examples such as (9), in which linear precedence is the controlling factor.

- (9) a Amy talked to Bea about Cy
 b Amy talked about Cy to Bea
 c Amy_i talked to Bea_j about herself_{i,j}
 d Amy_i talked about herself_i/*himself_j to Cy_j

Semantic factors arise in cases like (10)c, where perhaps the agency of the oblique prevents its being treated as anaphorically 'inferior' to the patient subject.

- (10) a Amy lied about herself
 b Amy slandered herself
 c *Amy was slandered by herself

Pollard and Sag (1992: 280, ex. 70) give (11)a,b as evidence that the objects of non-semantic prepositions such as *to* and *with* count the same as direct objects for purposes of anaphoric superiority, while *about* marks a more oblique argument.

- (11) a Kim_i told Bill_j about himself_{i/j}/*k
 b Kim_i talked to/with Bill_j about himself_{i/j}/*k

Notwithstanding the correctness of Pollard and Sag's point regarding the status of non-semantic prepositions, we observe that in a structurally parallel case like (12), semantic considerations seem to override relative obliqueness in establishing anaphoric superiority among coarguments.

- (12) It's wrong to discuss students behind their backs. We must start talking about them_i to themselves_i.⁹

Moreover, it does not seem that the semantic considerations operative in (12) can be reduced to a simple hierarchy of thematic roles, since at the relatively coarse level of agents, themes, goals, etc. the unacceptable (13)¹⁰ displays the same thematic structure as (12).

- (13) *I discussed Bea with herself.

There are also cases, such as (14), in which both relative obliqueness and relative semantic superiority (whatever that may be) give way to simple linear precedence.

- (14) a The envelope must be addressed by the applicant_i to himself_i in his own handwriting
 b The envelope must be addressed to the applicant_i by himself_i in his own handwriting

In view of the complexity, and apparent indeterminacy, of the facts governing anaphoric superiority among coarguments in English, the approach taken here to anaphoric superiority as a cross-linguistic phenomenon will leave the question of superiority among coarguments as a parameter to be set by each individual language,¹¹ perhaps according to some kind of multi-dimensional optimization procedure¹².

Valence command

The anaphoric superiority relation is called in CG (with staggering originality) 'valence command' or v-command. It is represented as a construction in (15). Construction (15) says that for two FSs [α] and [β], both of which are v-embedded in a FS [π], [α] v-commands [β] iff (i) [α] bears a θ -relation to [π] and (ii) either [β] bears no θ -relation to [π] or [α] is 'anaphorically superior' to [β] according to some language specific combination of the parameters of relative obliqueness, semantic role and linear precedence. We will see shortly how this construction comes into play in sentences containing lexical anaphors.

(15)

Valence Command (VC) Construction

$$\boxed{[\pi \text{ val } \{([\]\theta)^*[\alpha \text{ role } [\theta_\pi []], ([]\theta)^*[\beta]\}]} \\ (\text{If } [\beta \text{ role } [\theta_\pi []], \text{ then } \dots)]^{13}}$$

Universal (i.e., popular) domain constructions

In this section we examine the four widespread constructions representing the anaphoric domains introduced informally in (1), (2) and (3).¹⁴ The corresponding constructions all *inherit* the VC construction. That is, each of these

constructions contains all the information of the VC construction, plus some added information of its own.¹⁵

The Minimal Predicator Domain Construction (MPD) stipulates that the anaphor in question, $[\beta]$, must find (or not find) its antecedent in the minimal FS in which $[\beta]$ is v-embedded and which is a predicator (i.e., which has non-null semantics).¹⁶ This amounts to saying that with regard to the VC structure which the MPD construction inherits, none of the FSs intervening between $[\pi]$ and $[\beta]$ – which are collectively denoted by the expression ' $([\]\textcircled{\text{v}})^*$ ' preceding the expression ' $[\beta]$ ' – may carry non-null semantics. The Minimal Predicator Domain Construction may thus be notated as in (16).

- (16) Minimal Predicator Domain
(MPD)¹⁷

inherit VC $(\neg[\text{sem } \neg\text{null}]\textcircled{\text{v}})^*[\beta]$
--

The Minimal Subject Domain (MSD) Construction provides that no FS intervening in the chain of direct valence embedding from $[\pi]$ to $[\beta]$ contains a subject element.

- (17) Minimal Subject Domain (MSD)

inherit VC $(\neg[\text{val } \{\text{role gf subj}\}]\textcircled{\text{v}})^*[\beta]$
--

The Minimal Finite Domain (MFD) Construction is analogously represented.

- (18) Minimal Finite Domain (MFD)

inherit VC $(\neg[\text{synlfin } +]\textcircled{\text{v}})^*[\beta]$
--

Antecedence

The subject of antecedence, broadly construed, takes in both identity of the referential index of an anaphor with that of a v-commanding FS (binding) and non-identity of the referential index of an anaphor with that of a v-commanding FS (freedom). CG attributes to universal grammar an abstract Antecedence Construction, which is combined, via inheritance, with more specific constructions imposing a choice of either Binding (A) or Freedom (B). The Antecedence construction stipulates a structure satisfying a valence command relation between FSs $[\alpha]$ and $[\beta]$, provides $[\alpha]$ and $[\beta]$ with referential indices, and creates an attribute, represented 'i=j?', whose unspecified value ranges over the possibilities identical ('=') and distinct ('≠'). The Binding and Freedom constructions provide the values '=' and '≠', respectively, to the attribute assessing the identity or non-identity of the referential indices of $[\alpha]$ and $[\beta]$.

(19)

(i) Antecedence (Ant)

inherit	VC
sem	[i=j? []]
val	{[α ref i] , [β ref j]}

(ii) Binding (A)

inherit	Ant
i=j?	=

(iii) Freedom (B)

inherit	Ant
i=j?	≠

Individual languages: English

As illustrated in (1) and (2), English reflexives are bound in the minimal subject domain while English non-reflexive pronouns are free in the minimal predicator domain. Part of the description of English reflexive pronouns will require us to amalgamate the MSD construction and the A construction. Similarly, part of the description of English non-reflexive pronouns will require the amalgamation of the B construction and the MPD construction. The general idea is that each of the four constructions just mentioned is, as part of universal grammar, available to any language. The particular combinations mentioned (of A with MSD or B with MPD) are specific to English (of course, not only to English). The specific technique of 'amalgamation' we will use is again constructional inheritance.

Non-lexical anaphoric constructions of English

The non-lexical construction involved in the licensing of sentences with English reflexives consists simply in the inheritance of both A and MSD, as shown in (20)a. The non-lexical English construction involved in licensing sentences containing non-reflexive pronouns consists in the inheritance of B and MPD, as shown in (20)b.

(20)

a MSD Binding
(MSD-A)

inherit	MSD
inherit	A

b MPD Freedom
(MPD-B)

inherit	MPD
inherit	B

Lexical anaphoric constructions in English

As noted in the introduction, although in English one can divide pronouns into reflexives and non-reflexives, the first bound according to the structure presented in (20)a and the second free according to the structure presented in (20)b, in other languages individual anaphors may require different binding (non-binding) domains and anaphors may also require both freedom in a narrower domain and binding in a wider one. Consequently, conditions on binding and freedom, such as those expressed in (20), must ultimately be attached to individual lexical anaphors. Of course we would in any case have to find a way to get the English lexical anaphors to fill the role of $[\beta]$ in (20).

The general problem becomes how to attach conditions on antecedence, such as those given in (20), to particular lexical entries like *him* or *herself*. It will not do simply to say that the lexical entries inherit constructions like (20)a or (20)b, since these constructions denote the (classes) of verb phrases within whose valence values binding takes place, not the objects being bound, i.e., not the FSs filling the role of $[\beta]$ in these structures. In order to represent the fact that some FS $[\chi]$ has the property of being bound in, say, the minimal subject domain, we need to unify $[\chi]$, not with MSD-A itself, but with the $[\beta]$ substructure of MSD-A.

That the word *herself* must figure as the $[\beta]$ substructure in a MSD-A construct illustrates a kind of formal situation which is not restricted to the characterization of lexical *anaphors*. A number of other kinds of lexical items must occur in particular syntactic and semantic environments under circumstances in which it is not a property of the larger structure to require presence of the lexical item but rather a property of the lexical item to require realization in the larger structure and, crucially, the requirement of the lexical entry to appear in the larger structure is not a matter of the valence, subcategorization or argument structure properties of the former. For example, Fillmore (1990) shows that the word *ago* must appear as the second constituent of the Extent Modification construction which licenses such phrases as

- (21) a [three miles][beyond the city limits]
 b [long][after the dance]
 c [a mile][across]

Similarly, the word *respectively* calls for realization in a specific syntactic and semantic environment (McCawley 1976, Kay 1989). Analogous observations have been made regarding expressions like *let alone* (Fillmore, Kay and O'Connor 1988) *vice versa*, *respective* (Fraser 1970, McCawley 1970, 1976, Kay 1989), *at least* (Kay 1992; see also for French *au moins* 'at least' Ducrot 1980, Anscombe and Ducrot 1983). Negative polarity items in general, which notoriously do not all

require exactly the same syntactico-semantic context, also bear with them, as it were, the seeds of a larger structure in which they must occur.

I will use the term 'conscription' to denote a three place relation between a single-constituent construction S, a multi-constituent construction M and a constituent C of M where it is a property of S that it must unify with C. The term 'conscription' is chosen with the image of military conscription in mind. Unlike the metaphor of 'inheritance', where a 'person' (construction) 'receives' stuff from an outside source, the mnemonic image intended for 'conscription' is that the 'person' (construction) is required to play an assigned a role in a specific larger structure. For example, the lexical item *herself* is conscripted to play the role of the $[\beta]$ constituent in a MSD-A structure. We notate the conscription of construction S into the C constituent of construction M by writing 'conscript M: C' in our representation of S, which may be read 'S has the property that every construct licensed by S appears as an M constituent of a C construct.'

Typical constructions of lexical anaphors in English can now be given.

(22)

a <i>herself</i>	b <i>him</i>																
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">conscript</td> <td style="padding: 2px 5px;">MSD-A: $[\beta]$</td> </tr> <tr> <td style="padding: 2px 5px;">sem</td> <td style="padding: 2px 5px;">[...]</td> </tr> <tr> <td style="padding: 2px 5px;">syn</td> <td style="padding: 2px 5px;">[...]</td> </tr> <tr> <td style="padding: 2px 5px;">lxm</td> <td style="padding: 2px 5px;"><i>herself</i></td> </tr> </table>	conscript	MSD-A: $[\beta]$	sem	[...]	syn	[...]	lxm	<i>herself</i>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">conscript</td> <td style="padding: 2px 5px;">MPD-B: $[\beta]$</td> </tr> <tr> <td style="padding: 2px 5px;">sem</td> <td style="padding: 2px 5px;">[...]</td> </tr> <tr> <td style="padding: 2px 5px;">syn</td> <td style="padding: 2px 5px;">[...]</td> </tr> <tr> <td style="padding: 2px 5px;">lxm</td> <td style="padding: 2px 5px;"><i>him</i></td> </tr> </table>	conscript	MPD-B: $[\beta]$	sem	[...]	syn	[...]	lxm	<i>him</i>
conscript	MSD-A: $[\beta]$																
sem	[...]																
syn	[...]																
lxm	<i>herself</i>																
conscript	MPD-B: $[\beta]$																
sem	[...]																
syn	[...]																
lxm	<i>him</i>																

Lexemes with more than a single anaphoric domain: Norwegian

Long distance anaphors, that is, anaphors which must be bound outside a local domain, require conscription to both a non-binding and a binding construction. Bresnan and her collaborators in the mid-eighties (e.g., Bresnan, Halverson and Maling 1985) introduced the phenomena of long-distance anaphora into theoretical discussion within the LFG approach, and the language focused upon was Norwegian. Speaking in theory-neutral terms, the analysis of Norwegian to be presented here is based on that original LFG analysis, as summarized in Sells (1985: 174-178) and recently elaborated in a theoretical format more like the present one in Dalrymple (1993).¹⁸

I will not present the range of data on which this analysis is based, referring the reader to the sources cited in the preceding paragraph, but will simply provide a summary description of a few facts and show how these are modeled in the present approach.

Norwegian has three sets of anaphoric pronouns and one set of ordinary (non-bound) pronouns¹⁹. The reflexive pronouns may be divided up as follows. There are two local reflexives, *seg selv* and *ham selv*, both of which must be bound within the minimal subject domain (like English reflexives). The difference between *seg selv* and *ham selv* is that the antecedent of the former must itself be a subject while the antecedent of the latter may not be a subject. The third bound pronoun of Norwegian is the non-local reflexive *seg*. *Seg* must be free within the minimal predicator domain but also must be bound by a subject within the minimal finite domain. The free pronoun *ham* has the same properties as English *him* and

thus overlaps in distribution with *seg*. The examples in (23)²⁰ illustrate, but of course do not justify, the preceding descriptions.

- (23)
- | | | | | | | |
|---|---------------------------------------|------------------|---------------------------------------|-------------------|--|---|
| a | Jon _i
John _i | fortalte
told | meg
me | om
about | <u>seg selv</u> _i
himself _i | |
| b | Jon _i
John _i | hørte
heard | oss
us | snakke
talk | om
about | <u>seg</u> _i
him _i |
| c | Vi
We | fortalte
told | Jon _i
John _i | om
about | <u>ham selv</u> _i
himself _i | |
| d | Jon _i
John _i | ba
asked | oss
us | snakke
to talk | til
to | <u>ham</u> _i
him _i |

It is likely that a significant number of languages beyond Norwegian have anaphors which obligatorily take or reject subject antecedents. We are inclined to add to our array of universal anaphoric constructions a subject antecedence construction.²¹

- (24)
- | | |
|--------------------------------|----------------------------|
| Subject Antecedence (Subj-Ant) | |
| inherit | Ant |
| val | {[α role gf subj]} |

Combining Subj-Ant with constructions A and B (see 19), we get universally available constructions for subject binding and subject freedom.

- (25)
- | | |
|-------------------------------|-------------------------------|
| a Subject Binding
(Subj-A) | b Subject Freedom
(Subj-B) |
| inherit Subj-Ant
inherit A | inherit Subj-Ant
inherit B |

Lexical anaphoric constructions in Norwegian

Although the conditions on binding and freedom of Norwegian anaphors are more complex than those required for English, we do not need to posit additional non-lexical anaphoric constructions for Norwegian. Allowing distinct Norwegian lexical anaphors to conscript different combinations of the universally available constructions already at hand will suffice.

- (26)
- | | |
|--|---|
| <i>seg selv</i> | <i>seg</i> |
| conscript Subj-A: [β]
conscript MSD-A: [β]
lxm <i>seg selv</i> | conscript Subj-A: [β]
conscript MFD-A: [β]
conscript MPD-B: [β]
lxm <i>seg</i> |

<i>ham selv</i>	<i>ham</i>										
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">conscript</td> <td style="padding: 2px;">Subj-B: [β]</td> </tr> <tr> <td style="padding: 2px;">conscript</td> <td style="padding: 2px;">MSD-A: [β]</td> </tr> <tr> <td style="padding: 2px;">lxm</td> <td style="padding: 2px;"><i>ham selv</i></td> </tr> </table>	conscript	Subj-B: [β]	conscript	MSD-A: [β]	lxm	<i>ham selv</i>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">conscript</td> <td style="padding: 2px;">MPD-B: [β]</td> </tr> <tr> <td style="padding: 2px;">lxm</td> <td style="padding: 2px;"><i>ham</i></td> </tr> </table>	conscript	MPD-B: [β]	lxm	<i>ham</i>
conscript	Subj-B: [β]										
conscript	MSD-A: [β]										
lxm	<i>ham selv</i>										
conscript	MPD-B: [β]										
lxm	<i>ham</i>										

Integration with non-syntactic binding: Marathi *aapan*

Dalrymple discusses the Marathi long-distance reflexive *aapan* (1993: 11-17 *et passim*). She points out that this anaphor has three properties of interest to binding theory: (1) it must be free in what we have called the minimal predicator domain, (2) it must be bound in the root sentence domain (but not necessarily in the minimal finite domain), and (3) it must be bound by a 'logical subject', that is, what is called a distinguished argument (DA) in CG (see Fillmore and Kay 1993, Kay and Fillmore 1994). Although Dalrymple's approach provides perspicuous representation of the first two properties, she provides no formal representation of the third property of *aapan*. Perhaps this could be done, but no simple and perspicuous way to represent a requirement for binding by a distinguished argument immediately suggests itself within Dalrymple's LFG formalism. On the other hand in the valence-embedding approach developed here, representing DA binding presents no complications.

We earlier assumed that minimal subject domain binding (20)a and minimal predicator domain freedom (20)b were constructions of English in particular. This was too conservative, although it simplified the exposition at that point. We subsequently saw both these constructions show up in Norwegian and now we see MPD-B (20)b in Marathi. Something on the order of constructions (20)a and (20)b express the essential intuitions of Chomsky's original (1981) formulation of the universal Principles A and B of his binding theory. Let us suppose that the constructions of (20) are universally available to languages (though evidently not chosen by all). Having assumed this, to account for Marathi *aapan* we need only add to our existing inventory of non-lexical anaphoric constructions one specifying binding by a distinguished argument. It would be premature to judge this construction sufficiently widespread in the world's languages to attribute it to universal grammar, so we suppose for now that it is particular to Marathi.

(27) Distinguished Argument Binding (DA-A)

inherit	A
val	{[α role θ DA]}

Marathi *aapan* may now be represented as follows.

(28)

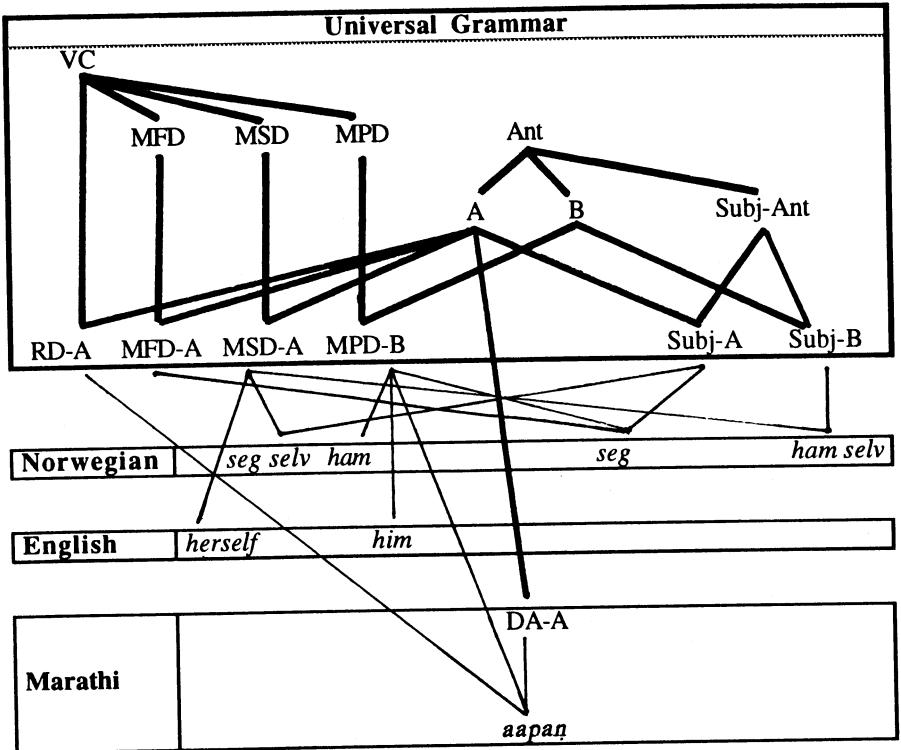
<i>aapan</i>	
conscript	RD-A: [β]
conscript	DA-A: [β]
conscript	MPD-B: [β]
lxm	<i>aapan</i>

Conclusion

Diagram (29) summarizes those anaphoric constructions which have been suggested to form part of universal grammar, in the sense of being *available* to every language. The non-lexical constructions given in the diagram are those needed to illustrate conscription with respect to the lexical anaphors of English, Norwegian and Marathi discussed in the text. In (29) a heavy line indicates constructional inheritance; a lighter line indicates conscription of a lexical anaphor into the [β] constituent of a non-lexical anaphoric construction.

A small number of non-lexical anaphoric constructions are attributed to universal grammar. The generalizations over these constructions are abstracted into an inheritance network, which provides an economical map of this region of universal grammar. Non-lexical anaphoric constructions in particular languages also exist. These may inherit one or more of the universal constructions, while adding further information of their own. Particular lexical anaphors in individual languages are conscripted into the non-antecedent role in one or more non-lexical anaphoric constructions, either universal or language-specific.²²

Anaphoric phenomena, regarded cross-linguistically, display a rather limited number of frequently occurring patterns. There are also anaphoric phenomena which are not widespread, occurring in one or a small number of languages. The constructional and unificational approach to anaphora sketched above, relying directly on the notions of valence embedding, constructional inheritance and conscription, appears to provide a perspicuous theoretical vocabulary for the discussion of these phenomena.²³



¹It is a special pleasure to contribute the present paper to a conference dedicated to Charles Fillmore, with whom I've been honored to collaborate on the development of Construction Grammar for the past decade. In addition he has contributed specific ideas to this paper, which I gratefully acknowledge. I would also like to thank Jean-Pierre Koenig for important contributions to the paper.

² I will use the expression 'anaphoric domain', or simply 'domain', as a shorthand for 'domain in which an anaphoric element is required to find, or required not to find, an antecedent'.

³ See, for example, Bresnan, Halvorsen and Maling 1985.

⁴ 'Nearest' in a sense to be made more precise below.

⁵ More accurately, this is true only of local o-command. O-command involves both subcats lists and constituent structures.

⁶ We ordinarily represent constituent structures as nested boxes rather as rooted graphs. Nothing turns on this choice, which merely provides a convenient place in the constituent structure skeleton to display the feature structures.

⁷ Hence a single box.

⁸ This is a considerable oversimplification, but accurate enough for present purposes.

⁹ Pollard and Sag (1992: 299) consider examples structurally like (12) simply ungrammatical. The literature is rife with conflicting acceptability judgments for examples involving non-subject coargument antecedents for English reflexives, the starred examples of one author often claimed to be acceptable by another. This variability would itself seem to argue for the kind of multi-factor, 'trade-off' approach to coargument anaphoric superiority suggested below.

¹⁰ The example is from Charles Fillmore (pc).

¹¹ Pollard and Sag (1992: 297-299) provide an insightful discussion of these and related issues, as does Dalrymple (1993:168-177). The former come down on the side of relative obliqueness of grammatical function, the latter on the side of thematic primacy. I propose a blessing on both houses – with tolerance for linear order as well.

¹² Optimality theory (see e.g., Prince and Smolensky 1993) provides a special example of an optimization procedure. 'Optimality' constitutes a limiting case of optimization in which the effect of each factor absolutely outweighs the combined effects of all less powerful factors. Labov's original additive model of variable rules (proposed to govern token frequencies) has this same property. It consists of a set of ranked constraints in which the effect of each constraint outweighs the combined effect of all lower constraints (Labov 1969).

¹³ The technique of iterated valence embedding employed here for modeling anaphoric dependencies, which may be unbounded, is also used in Kay and Fillmore (1994) for modeling the familiar 'filler-gap' unbounded dependencies arising in connection with phenomena such as topicalization and wh-movement. This technique bears a close relationship to the functional uncertainty of Kaplan and Zaenen (1989) and in the present application to lexical anaphors an even closer relation to the 'inside-out functional uncertainty' of Dalrymple (1993: 117 ff). The main difference is that while the LFG approaches involve somewhat indirect allusion to successively embedded argument sets, via the grammatical functions of the predicators governing these argument sets, valence embedding refers directly to the argument sets in question. When reference to properties of the valence sets other than their grammatical functions is desired, valence embedding requires no auxiliary devices, such as the off-path constraints of Dalrymple (1993: 128 ff).

¹⁴ These are for all practical purposes those proposed by Dalrymple (1993: 113-152).

¹⁵ One may thus read the notation 'inherit VC' in a box as saying 'imagine that all the information recorded within the outer box of the VC construction is written in this box too'. Inheritance is not intended in CG, however, as a mere notational convenience but rather as a device for the perspicuous expression of linguistic generalizations.

¹⁶ In example (1) *on* does not count as a predicator because it has null semantics.

¹⁷ A more longwinded representation of the same construction, not showing the inheritance of VC explicitly, would look like the following.

(i)

$\{\pi \text{ val } \{([\]\epsilon)^*[\alpha \text{ role } \theta_\pi[\]], (\neg[\text{sem } \neg\text{null}]\epsilon)^*[\beta \]]\}$

Our informal convention for depicting constructions exhibiting inheritance is to repeat just enough of the inherited construction for the reader to be able to see where the uninherited information is added.

¹⁸ Dalrymple (1993: 87ff) discusses some significant differences in judgments between Hellan (1988) and Hestvig (1991). Briefly put, Hestvig's judgments allow a formulation which does not distinguish the minimal predicate domain and the minimal subject domain, while Hellan's require a distinction of this kind. Dalrymple accepts the judgments of Hellan, as do I. Checks with two native speakers on the critical cases, for the elicitation of which I am indebted to Andrew Dolbey, confirm the Hellan-Dalrymple version of the facts. There are clearly Norwegian speakers for which the full range of distinctions proposed here is necessary.

¹⁹ We restrict our attention, for the sake of brevity, to forms appropriate to third person singular male referents.

²⁰ From Sells (1985) and Dalrymple (1993).

²¹ Should this decision turn out to be ill-advised, subject antecedence showing up in a tiny handful of languages, it would be more reasonable to posit the corresponding construction independently in each.

²² This paper has ignored anaphors which accept non-superior antecedents. It is well known that such anaphors exist (Keenan 1988, Dalrymple 1993: 157-158, Culy 1991), but since these have received much less attention in the literature and are less well understood than anaphors accepting some kind of asymmetric inferiority relation to their antecedents, it would not be practical to attempt to deal with them in a paper of this length. It is hoped that the flexibility provided by the CG approach will ultimately permit an accurate treatment of such phenomena.

²³ Whatever originality there may be in this view is probably more synthetic than creative. Inscription and, especially, inheritance are quite similar to the HPSG notion of (sub)typing and valence embedding has much in common with LFG's functional uncertainty.

References

- Anscombe, Jean-Claude, and Oswald Ducrot. 1983. *L'argumentation dans la langue*. Brussels: Mardaga.
- Bresnan, Joan. 1982. Control and complementation. In *The Mental Representation of Grammatical Relations.*, ed. Joan Bresnan. Cambridge, Mass: M.I.T. 282-390.
- Bresnan, Joan, Per-Kristian Halvorsen, and Joan Maling. 1985. *Logophoricity and bound anaphora*. ms. Stanford University.
- Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.

- Culy, Christopher D. 1991. Command and the Fula *dum* pronominals. Proceedings of the Special Session on African Linguistics of the Seventeenth Annual Meeting of the Berkeley Linguistics Society.
- Dalrymple, Mary. 1993. The syntax of anaphoric binding. Stanford: CSLI.
- Ducrot, Oswald. 1980. *Les mots du discours*. Paris: Minuit.
- Fillmore, Charles J. 1990. Extent Modification. Lecture. Stanford University.
- Fillmore, Charles J. and Paul Kay. 1993. Construction Grammar. ms. University of California at Berkeley.
- Fillmore, Charles J., Paul Kay and Mary Catherine O'Connor. 1988. Regularity and idiomaticity in grammatical constructions: the case of *let alone*. *Language*. 64: 501-538.
- Fraser, Bruce. 1970. A note on *vice versa*. *Linguistic Inquiry*. 1: 277-278.
- Hellan, Lars. 1988. Anaphora in Norwegian and the theory of grammar. Dordrecht: Foris Publications.
- Hestvig, Arild. 1991. Subjectless binding domains. *Natural Language and Linguistic Theory*. 9: 455-496.
- Kaplan, Ronald M. and Annie Zaenen. 1989. Long distance dependencies, constituent structure, and functional uncertainty. In *Alternative conceptions of phrase structure*, ed. Mark Baltin and Anthony Kroch. Chicago: Chicago University Press.
- Kay, Paul. 1989. Contextual operators: *respective*, *respectively* and *vice versa*. Proceedings of the Fifteenth Annual Meeting of the Berkeley Linguistics Society. 181-192.
- Kay, Paul. 1992. *At least*. In *Frames, Fields and Constrasts*, ed. by Adrienne Lehrer and Eva F. Kittay. Hillsdale, N.J.: Earlbaum.
- Kay, Paul, and Charles J. Fillmore. 1994. Grammatical constructions and linguistic generalizations: the *What's X doing Y?* construction. ms. University of California at Berkeley.
- Keenan, Edward L. 1983. Complex anaphors and bind α . In *Papers from the 24th Regional Meeting of the Chicago Linguistics Society*, ed. by L. MacLeod, G. Larson, and D. Brentari.
- Labov, William. 1969. Contraction, deletion, and inherent variability of the copula. *Language*. 45: 715-762.
- Manzini, Maria Rita, and Kenneth Wexler. 1987. Parameters, binding theory and learnability. *Linguistic Inquiry*. 18 (3). 413-444.
- McCawley, James D. 1970. On the applicability of *vice versa*. *Linguistic Inquiry*. 1: 278-280.
- McCawley, James D. 1976. The annotated *respective*. *Grammar and meaning: Papers on syntactic and semantic topics* (by James D. McCawley). New York: Academic. 121-132.
- Pollard, Carl, and Ivan A. Sag. 1992. Anaphors and the scope of the binding theory. *Linguistic Inquiry*. 23 (2): 261-303.
- Prince, Alan and Paul Smolensky. 1993. *Optimality theory: Constraint interaction in generative grammar*. ms. Rutgers University and University of Colorado.
- Sells, Peter. 1985. *Lectures on contemporary syntactic theories*. Stanford: CSLI/Univeristy of Chicago Press.