LFG and the history of raising verbs
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Abstract[1]

Grammaticalisation has traditionally been seen as a process which involves "semantic bleaching" and a process whereby lexical items become grammatical morphemes. Whilst this concept is understandable intuitively it is not clear why meaning shift should affect syntactic structure to any degree. In this paper I explore whether a lexically based theory of syntax such as LFG is able to account for these parallel processes. Drawing on the particular syntactic properties of so-called "subject-to-subject raising verbs" I develop an account of how these predicates have arisen historically from predicates with full argument structure and show how one notion of semantic bleaching may correspond to the historical dissociation of function and theta-role. This will in turn affect the syntactic representation of these predicates. Using the parallel levels of representation of the LFG framework I postulate that the one-to-one mappings of concepts to grammatical functions through the media of Sem(antic)-structure, Arg(ument)-structure and G(rammatical) F(unctional)-structure may become shifted through suppression, caused either by productive morphosyntactic processes or historic reanalysis. For example, a perception verb may become a "raising verb" if three conditions apply: i) the presence of secondary predication; ii) suppression of the perceiver argument though detransitivisation; (iii) cognitive shift from a physical to a mental process. This results in the dissociation of the subject function from its originally assigned theta-role.

0.   Introduction

Much has been written about raising verbs and how to account for them and represent them in various theoretical frameworks. At an pretheoretical level we can say that in sentences like:

(1) Leo seems to prefer red wine
(2) Clio is believed to have lied about that

the subjects of the matrix verbs *seem* and *believe*, which are *Leo* and *Clio* respectively, have no semantic relation to those verbs, but rather are associated with the verb of the embedded clause. This is illustrated by their possible paraphrases:

(3) It seems that Leo prefers red wine
(4) It is believed that Clio lied about that

Put more formally, we say that predicates like *seem* do not assign a theta-role to their subject. Accounts are offered in most frameworks to explain how the subject of the embedded predicate ends up as the superficial subject of the matrix verb: in Relational Grammar (Postal 1974) it is known as subject-to-subject raising (within a general notion of 'ascension') and is motivated by the Final 1 Law, i.e. the rule that (in English) all clauses must ultimately have a subject; in Government and Binding Theory (Chomsky 1981) it is an instance of NP movement and is 'Case-driven', i.e. the subject NP has to move in order to acquire Case. The following kind of derivational structure would be posited to the sentence in (1):

(5)   [e   seem [Leo to prefer red wine]]

In LFG, the phenomenon is treated as a one of functional identity at the level of f-structure. *Seem* states in its lexical entry that it subcategorises for an XCOMP to which it does assign a theta-role and a subject function, to which it doesn't, represented as:

(6)   (↑PRED) = 'SEEM <(XCOMP)> (SUBJ)'   (Bresnan 1982:377)
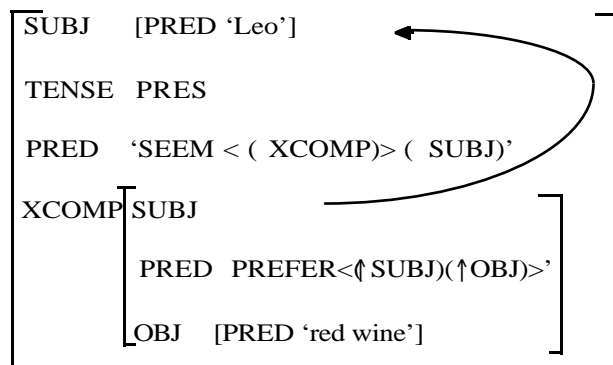

The subject is identical to the subject of its complement clause by the mechanism of functional control, the statement of which is found in the lexical entry of the verb:

(7) ($\uparrow$SUBJ) = ($\uparrow$XCOMP SUBJ)

So, a representation of sentence (1) would be:
(8)

$$\begin{bmatrix} \text{SUBJ} & \text{[PRED 'Leo']} \\ \\ \text{TENSE} & \text{PRES} \\ \\ \text{PRED} & \text{'SEEM} < (\text{ XCOMP})> (\text{ SUBJ})' \\ \\ \text{XCOMP} & \begin{bmatrix} \text{SUBJ} & \\ \\ \text{PRED} & \text{PREFER}<(\text{ SUBJ})(\uparrow\text{OBJ})>' \\ \\ \text{OBJ} & \text{[PRED 'red wine']} \end{bmatrix} \end{bmatrix}$$

LFG then, has a non-movement account of the phenomenon of "subject raising".

What however has not really been addressed in the literature, to my knowledge, is how this particular phenomenon arises diachronically. If it is one of the fundamental characteristics of predicates that they assign an external theta-role, why should it be that these "raising" predicates are in some way defective? How is it that the two properties of function specification and theta-role specification have become dissociated?

In this paper I shall be examining a class of subject-to-subject raising verbs which I think can shed some light on this issue. These are those raising verbs which are cognate with verbs of physical visual perception. I will examine them from two points of view, both of which should be open to the same analysis. In the first place I will look at synchronically related forms, where productive morphosyntactic processes relate verbs of perception to raising verbs. In the second, I will look at some diachronic data, where a predicate which had full theta-role and function assignment has become a raising verb, with the kind of defective lexical entry in (6) above.

A major goal of this work is to examine some central tenets of grammaticalisation within the framework of LFG. In particular I aim to find a way of representing the notion of 'semantic bleaching' first discussed by Gabelentz (1891). It is a recognised pattern that over time lexical items will shift in meaning, typically becoming more abstract. In addition, a parallel process is that lexical items will become grammatical morphemes as noted by Meillet (1912). The example of *will* illustrates both points, originally a lexical verb indicating volition, it has shifted to a modal auxiliary indicating futurity (among other things). The syntactic constructions in which *will* can occur have altered too, so that its distributional properties are different. However, as pointed out by Hopper and Traugott (1993:89) :

> Two general working principles arise out of our understanding of the processes of inferencing in grammaticalisation. One is that the meanings will always be derivable from the original lexical meaning by either metaphorical or conceptual metonymic inferencing. Therefore meaning changes in grammaticalisation are not arbitrary. Secondly, since the initial phase of grammaticalisation involves a shift in meaning, but not loss of meaning, it is unlikely that any instance of grammaticalization will involve a sudden loss of meaning.

Indeed we can still understand how the notion of volition relates to one of futurity - put simply if we want to do something, it may result in our doing it in the future.

Various mechanisms of grammatical change, such as reanalysis, analogy and metaphor have been discussed in the literature (see Harris and Campbell (1995) for a recent survey of the literature), however it is still not entirely a straightforward matter to explain how gradual semantic shift should restructure the syntax.

The paper is organised as follows: In part one I shall look at the semantics of subject-to-subject raising verbs. In part two I shall discuss the process of semantic shift which I believe has taken place as verbs of perception become markers of epistemic modality. In part three I shall examine some synchronic data illustrating the relation between verbs of perception and 'raising verbs'. In part four I shall examine the diachronic development from its origins as a predicate with typical one-to-one mapping of θ-role, argument and function structure to its current status as a raising verb. In part five I present my conclusion.

1.   The semantics of subject-to-subject raising verbs.

Many subject-to-subject raising verbs are synchronically markers of epistemic modality. That is, they are concerned with expressing the speaker's attitude or belief relative to the content of a proposition. "Epistemic modality relativizes truth to speakers by relating their current state of knowledge or belief to the content of their expressions." (Frawley (1992)). If we inspect some common examples of "raising" verbs, it becomes clear that they all express the speaker's epistemic notions of possibility, probability etc.:

(9)   a.   Leo seems to be in a bad mood
          b. Clio appeared not to understand the question
          c. This summer promises to be a scorcher
          d. Leo is expected to arrive on time
              e.   Clio is believed to have lied about that

Such verbs have a default subjective, or speaker-oriented, interpretation in the sense that they cannot readily be ascribed to a second or third person. They either refer to the speaker's point of view, or to an unspecified generic 'perceiver'. As Postal (1971) points out: ".. taking *seem* and *think* to contrast, it is true that both describe inner affairs which are, in fact, directly knowable only be the one who experiences them. However, *seem* not only describes such a domain, but it says it describes such a domain." This explains the contrast in grammaticality between the following pair:

(10)   a.   Clio appears to me to be dishonest.
           b.   *?Clio appears to you to be dishonest

(10b) is only grammatical under the interpretation in which the speaker is making a judgment about the beliefs of the second person, i.e. it is still speaker-oriented.

The difference between the raising verbs like *appear* and *seem*, and epistemic modals verbs, such as *may, might, should* and *must* (in their epistemic uses), is that they in some way express the source of or grounds for the speaker's belief. They are evidentials.

For Givón (1982), epistemic modality is the way a language expresses the relative validity of propositions, and this depends in turn on how the language and the culture in which the language is embedded interpret a universal scale of epistemic choice. He claims that languages quantify evidence along four gradients:

1. Person: Speaker > Hearer > Third Person.

2. Sense: Vision > Hearing > Other Senses > Feeling.
3. Directness: Senses > Inference
4. Proximity: Near > Far

Frawley (1992). Miller and Johnson-Laird (1976), Givón (1982) all point to the fairly obvious fact that vision supersedes all other categories in sensory evidence. In other words our strongest source of knowledge comes from our own eyes : seeing is believing.

In the next section I shall briefly consider how exactly this shift in meaning from verbs of visual perception to markers of epistemic modality takes place.

2 .   Semantic shift: perception to epistemic modality markers

As Miller and Johnson-Laird (1976) point out, '*Perceive (x,y)* is a predicate that denotes the process involved when an internal representation of the external world is constructed out of information from the receptors'. As described above, visual evidence is the primary source of such information. The reflection of this in language has been attributed by Sweetser (1990) to metaphorical processes, notably the "mind-as-body" metaphor.

> Vision and intellection are viewed in parallel ways, partly because of the focusing ability of our visual sense - the ability to pick out one stimulus at will from many is a salient characteristic of vision and of thought, but certainly not characteristic of any of the other physical senses except hearing….But most of all vision is connected with intellection because it is our primary source of objective data about the world.   (Sweetser 1990:38)

She describes the direction of meaning change involved in metaphor as the transfer from a basic, concrete meaning to a more abstract one. The extension to the cognitive domain is reflected in the expression of perception of not just physical objects, but events and propositions.

In order to express the perception of a proposition two clauses have to be combined in some way. At the most simple level, co-ordination could be used:

(11)   I see the problem and the problem is difficult

Alternatively, subordination:

(12)   I see the problem, which is difficult.

Or, more economically perhaps, by making the proposition an argument of the verb of perception:

(13)   a. I see that the problem is difficult
        b. I see the problem to be difficult

The next stage in the process is the realisation that if the speaker **is** the perceiver/believer it becomes redundant to specify this. It can be taken for granted that a particular speaker can only express their own thoughts with regard to a proposition. The most economic way then to express such clauses is to express the proposition and the grounds for belief. It is not necessary to use a first person argument at all. In English, the epistemic modal verbs *may, might, should* etc. express the speaker/believer relation with regard to a proposition, but they do not express the source of belief, unlike epistemic modals cognate with verbs of perception which do.
The mechanism by which they do this will be outlined in the next section, where we consider verbs of perception which are synchronically related to verbs expressing epistemic modality.

3.   Synchronically related forms

There are many languages in which the verb meaning 'to see' is related to a verb meaning 'to seem' via a variety of active morphosyntactic processes. For example some strategies are listed below:

Passive

Latin:	*videre*	to see	*videri*	to be seen, to seem
cf.	*monere*	to warn	*moneri*	to be warned

Reflexive passive

| Turkish: | *görmek* | to see | *görünmek* | to seem |

Other detransitivising affixation

Zulu:	*bona*	to see	*bonakala*	to seem
Japanese:	*miru*	to see	*mieru*	to be visible, seem
German:	*sehen*	to see	*aussehen*	to look (copulative)

What all these processes have in common is the suppression of the external argument, which has the semantic role of a perceiver. A two-place predicate becomes a one-place predicate. However, the one-place predicate may be a proposition with its own internal predication.

We will examine in more detail the Latin strategy of passivisation of the perception predicate which yields two readings, the straightforward passive and the epistemic reading. First of all, I have given a general representation of passivisation in the parallel structure framework of LFG adopting the kind of schema used by Tara Mohanan (1994):

(14)

SEM STRUCTURE	X	Y	trans predicate
ARG STRUCTURE	ARG_1	ARG_2	PRED
GF STRUCTURE	(ADJ)	SUBJ	GF PRED
WORD STRING	(by phrase)	subj	pred+passive

The parallel levels of representation are defined as follows:

Semantic structure. A level where all and only linguistically relevant semantic distinctions that show systematic correlates in the morphology or syntax of natural languages are represented. It is distinct from meanings in the real world involving entailments and from the non-linguistic representation of concepts, situations etc. (Mohanan 1994). It differs therefore from Lexical Conceptual Structure (LCS) in that LCS is not deemed to be visible to syntax, whereas Semantic Structure may be.

Argument structure. A level where the syntactic valency of a predicate is represented. The relative prominence among arguments is represented at this level, but not their individual thematic roles. Arguments are mapped onto functions at the level of functional structure by the Lexical Mapping Theory.[2]

Functional structure. A level where the syntactic functions (subject, object) of arguments, as well as non arguments are represented as feature value matrices. In addition grammatical features such as tense, aspect, mood, person, number etc., are represented. These may be morphological elements which can build partial feature structures.

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[2] The precise formulation of Lexical Mapping Theory is not crucial to the discussion in this paper. For a formulation see Bresnan and Kanerva (1989), Alsina (1992).

(14) shows a transitive predicate which has two semantic arguments, represented at the level of Semantic Structure. These map onto two argument slots at the level of Argument Structure. Passive morphology, however, suppresses the highest argument so that it is not available for mapping to a direct function (suppression is indicated by underlining). The second argument then maps onto the subject function, which this language requires to be filled. The word-string, (or C-structure) onto which the GF Structure maps contains a subject, a passive verb and an optional adjunct phrase.

Let us now turn to two examples from Latin, which illustrate the use of passive morphology to give on the one hand a straightforward passive reading and on the other an epistemic reading:

(15)   ubi   sol etiam sex   mensibus   continuis   non   videtur
        where   sun even six   months   continuous not   see.PRES.PASS.3SG
        'where the sun is not seen for six months in a row'   (Varro, *Res Rusticae* 1,2,4)

(16)   ne   omnia   mea   culpa   cecidesse   videantur
        lest   all.NEUT.PL.NOM   my.ABL   fault. ABL   fall.PERF.INF
see.PASS.PRES.SUBJ.3PL
        'so that everything should not seem to have collapsed through my fault'.
                                                                    (Cicero, *Fam* 14,3)

Passivisation suppresses the perceiver and 'recruits' a lower argument to map onto the subject function in order to fulfill Subject Condition (Alsina 1996:20).

(17)   *Subject Condition*
        An f-structure with propositional content must include a subject (as one of its grammatical functions) and no f-structure may include more than one subject.

In (15) it is the object of physical perception which is recruited, but (16) has a clausal or adjectival complement, i.e. additional predication It is the subject of this embedded predicate which is mapped on to the subject function of the matrix predicate. The theta-requirements of the embedded predicate are fulfilled and the function requirements of the matrix predicate are also satisfied. This is illustrated schematically for (16) in (18).

(18)

	[perceiver	proposition	perceive pred]
SEM STRUCTURE	X	Y	
		[Z …PRED]	
ARG STRUCTURE	$\underline{ARG}_1$	ARG	PRED
GF STRUCTURE		SUBJ XCOMP	PRED
WORD STRING		omnia cecidesse	videantur
		all collapsed	seem

Here, the perceiver argument is suppressed at the level of argument structure and the presence of the proposition conveys the semantic shift from physical to mental perception. This has an effect upon the syntactic realisation of the suppressed perceiver argument. If it surfaces as an adjunct it will do so marked as an experiencer argument (typically dative case). Whilst passive morphology is present in both (15) and (16), suppressing the external argument, the two structures differ at the

level of semantic structure. In (16) there is a propositional object which contains secondary predication.

The three conditions, then, which can derive an epistemic reading from a perception predicate are:
(i)   the presence of secondary predication
(ii)   the suppression of the perceiver argument through detransitivisation
(iii)   cognitive shift from a physical to a mental process.

Some languages may have a specific suffix to indicate the shift from physical to abstract perception in the presence of an embedded proposition as can be seen if we examine the following data from Turkish.

(19)   ben   John-u   dün   is-e   gid-erken   gör-dü-m
        I   John-ACC   yesterday work-DAT go-GERUND   see-PST-1SG
        'I saw John going to work yesterday'

(20)   John dün   is-e   gid-erken   (benim tarafimdan)   gör-**ül**-dü-Ø
        John yesterday work-DAT go-GERUND   (I-GEN by)   see-PASS-PST-3SG
            'John was seen (by me) going to work yesterday'

(21)   John (ban-a) dün   is-e   gid-iyor   gör-**ün**-dü-Ø
        John (I-DAT) yesterday work-DAT   go-PROG   see-SUFFIX-PST-3SG
            'John seemed (to me) to be going to work yesterday'

In (19) we have an active perception predicate which takes an event object, which forms the secondary predication. In (20), the perception predicate is passivised, by the passive morpheme *Vl*. This gives us conditions (i) and (ii) above, and the subject of the embedded predicate is "raised" to matrix subject. However we still have a physical event reading, not an epistemic one. This is partly reflected in the choice of adjunct expression for the suppressed perceiver - a *by*-phrase. In (21), however, the *Vn* suffix has two effects: it suppresses the external perceiver argument and promotes the subject of the embedded predicate; in addition it forces the abstract reading. The suppressed perceiver may now be realised as an experiencer adjunct in dative case. The marking of the embedded predicate is also affected, with a progressive rather than a gerund suffix.

Latin and Turkish are both examples of languages which "recruit" a nominal from the subject position of the embedded predicate to fill the subject requirement of the main clause. However, not all languages require such referential subjects. These languages nonetheless are able to derive an epistemic reading from a perception predicate by the same mechanism. A subject may not be "recruited" but may remain in the embedded clause and an expletive subject supplied. One such language is Zulu.
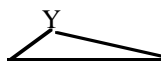
(22)   wa   bona   ukuti uku   baleka   kakuko
        he   saw   that   to   run away   impossible
        'he saw that to run away was impossible'

(23)   kwa   bona**kala**   ukuti indoda   le ya i khathele
        it   seemed   that   the man   pst   tired
        'it seemed that the man was tired'

Zulu has a neutral detransitivising suffix, *akala*, which suppresses an external argument. In examples (22) and (23) the propositional argument is expressed as a *that*-clause. Thus all three conditions are present for an epistemic reading in (23). I follow Alsina (1996:72) in assuming that

expletive subjects are not represented at the level of argument structure but are coindexed with an argument with propositional content. The representation of this is given in (24).

(24)   Simplified schema of example (23)

		[perceiver	proposition	perceive-PRED]
SEM STRUCTURE		X	Y	

$$[Z\dots PRED]$$

ARG STRUCTURE		ARG$_1$	ARG	PRED
GF STRUCTURE		SUBJ	COMP	GF PRED
WORD STRING		kwa$_i$	[ukuti..khatele]$_i$	bonakala
		it	that…	seemed

So far we have seen how active morphosyntactic processes relate verbs of perception to epistemic "modals" when conditions (i),(ii) and (iii) apply. Whether these "raise" the subject of the secondary predicate or use an expletive, or can do either, depends upon language particular criteria.[3] In the next section we turn to our examination of diachronic data.

4.   Diachronic developments

Overt morphosyntax is not always a necessary prerequisite of argument restructuring. This is very evident in English where there is no overt verbal morphology where other languages would have specific morphemes to signal changes in argument-function mapping. One example, the benefactive or 'dative shift' phenomenon, exemplifies this:

(25)   Jo baked a cake for Leo

(26) Jo baked Leo a cake

Another example is the causative versus inchoative reading of many predicates:

(27)   Leo broke the door handle

(28)   The door handle glass broke

Nor is argument restructuring necessarily lexically signalled. For example, in the active versus copulative readings of perception verbs.

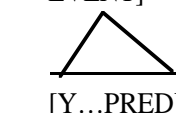(29)   a.   Jo <u>heard</u> the musician playing.
         b.   The music <u>sounded</u> terrible.

(30)   a.   Leo could <u>taste</u> that the red wine was sour.
         b.   The red wine <u>tasted</u> sour.

In such instances we have to claim that reanalysis takes place overtly by suppression of the relevant arguments at the level of semantic structure. The contrast between (27) and (28) can be illustrated schematically as follows:

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[3] Following the workshop on discourse and phrase structure at LFG97, I feel that such differences may be due to information structure requirements and/or f- and c-structure constraints of particular languages. This requires further research.

(31)   Representation of *Leo broke the door handle*

	[agent	cause	EVENT]
SEM STRUCTURE	X		
			[Y…PRED]
ARG STRUCTURE	ARG	PRED	ARG
GF STRUCTURE	SUBJ	GF PRED	OBJ
WORD STRING	Leo	broke	the door handle

(32)   Representation of *The door handle broke*

	[agent	cause	EVENT]
SEM STRUCTURE	X		
			[Y…PRED]
ARG STRUCTURE			ARG PRED
GF STRUCTURE			SUBJ GF PRED
WORD STRING			the door handle broke

In (32) we can see that the agent and cause are suppressed at the level of semantic structure. This gives them no linking to any syntactic structure, as they do not link to argument slots. This can be endorsed by the ungrammaticality of any expression of the agent argument even by an adjunct:

(33)   The door handle broke *by/*to Leo

This contrasts with the suppression of the agent at argument structure with the passive predicate where an adjunct expression is possible:

(34)   The door handle was broken by Leo.

If an argument is suppressed at the level of argument structure it is still linked to its thematic argument at semantic structure and its meaning is recoverable. It is even expressible in the syntax as an adjunct. The suppression of entities at the level of semantic structure is effectively a delinking from argument structure. This can be seen as a stage in the weakening of the link between syntax and semantics, a type of semantic bleaching.

We now examine the possible historic progression of a predicate with prototypical one-to-one mapping between semantic structure, argument structure and grammatical function structure to its synchronic status as an epistemic modality marker with no thematically selected subject. I postulate that a covert process, not dissimilar to that outlined in (32), is responsible for both the semantic shift and the resultant syntactic effect.

The example I have in mind is the development from Latin to Romance of the verb *simulare* 'to pretend' which is the etymon of *sembler* (French) and *sembrare* (Italian) 'to seem'. Synchronically it is not immediately apparent why *seem* should develop from *pretend*, however if we deconstruct the semantics of *pretend* it becomes clearer. To pretend is to attempt to cause an event in which a perceiver perceives a proposition or event - to cause someone to believe something.

Examples (35) is given the representation in (36).

(35)   qui   omnia se   simulant   scire
       who   all   refl.   pretend.PRES.3PL   know.INF
       ' those who pretend to know everything'   (Plaut.Trin.1,2,168)

(36)

	[agent	EVENT	cause]
SEM STRUCTURE	Z [perceiver	proposition	perceive-pred]

	X	Y		
			Z...PRED		
ARG STRUCTURE	ARG$_1$	ARG	ARG	PRED
GF STRUCTURE	SUBJ	(IND.OBJ)	COMP	GF PRED
WORD STRING	qui	se omnia scire		simulant
	those who	themselves all know		pretend

In (36) we see that the cause and perceive predicates are fused into one form, *simulare*. The agent maps onto the top argument and onto the subject. The perceiver as an internal argument is canonically realised as an indirect object, though here it is unexpressed as it is arbitrary.

Example (37) is the modern French equivalent of (35), which no longer contains any notion of 'pretend' but is an epistemic modality marker. My thesis is that over time the agent and the cause in (36) have become suppressed at the level of semantic structure in a decausativisation process similar to that in (32) . This leaves them with no linking to syntax. The resulting structure is given in (38), which I take to be an intermediate stage in the process of semantic bleaching.

(37)   ceux   qui   semblent   tout   savoir
       those   qui   seem   everything   know. INF
       'those who seem to know everything'

(38)   Intermediate stage in process of semantic bleaching.

	[agent	EVENT	cause]
SEM STRUCTURE	Z [perceiver	proposition	perceive-pred]

	X	Y	
		Z...PRED	
ARG STRUCTURE	ARG	ARG	PRED
GF STRUCTURE		SUBJ XCOMP GF PRED
WORD STRING		ceux qui tout savior semblent
		those who all know seem

The perceiver argument is suppressed at the level of argument structure, leaving it open to interpretation by an adjunct. This suppression is covert in the sense that there is no overt morphosyntax. The only available nominal to map onto the subject function is the subject of the embedded predicate so here it is recruited.

Crucially the representation of the result of the historical development of *simulare* to *sembler* is exactly the same as that of the synchronically derived epistemic modals discussed in section 2. (38), then, is essentially a replica of (18). French may in fact favour an expletive subject, in which case a representation of the type given for the Zulu data above would be appropriate. The following are alternatives:[4]

(38)   a.   Ils semblent tout savoir
               They seem to know everything

       b.   Il semble qu'ils savent tout.
               It seems that they know everything.

5.   Conclusion

In this paper I have been concerned with trying to find a mechanism which will explain two things:

   1) Why and how can semantic bleaching affect the syntax of clauses, in particular, how can it account for the mismatch of function and theta-role that we find in raising verbs?

   2) Where do raising verbs come from? How does a predicate which has a one-to-one correspondence between arguments at different levels of structure come to lose it?

The answer to question one depends in part upon the realisation that semantic bleaching is not a sudden process but a gradual one. A lexical entry provides information about a predicate at all parallel levels simultaneously. If, through redundancy such as is the case here, an argument is suppressed at the level of argument structure then it may only be expressed in the syntax by an adjunct. The original meaning is still recoverable because it is present at semantic structure. Here for example, in the synchronic data, the link between epistemic modals and verbs of physical perception is still recoverable because the perceiver argument is present at semantic structure.

Over time, however, semantic bleaching may result in the suppression of the argument at semantic structure. In this case the link with the argument will be lost, and the meaning will cease to be recoverable. Then true semantic shift has taken place. Meanwhile, the functional requirements of the language with respect to things like the Subject Condition must still be respected. The suppression of arguments, via productive processes like passivisation, or historic processes, like redundancy, will result in a mismatch of accessible argument slots to available functional slots. This is why the syntax is affected by meaning shifts. A nominal which is not the thematic subject of a predicate may find itself fulfilling the subject function.

This then is also the answer to question two above. Raising verbs arise when mismatches of the kind described above occur. More specifically, verbs with an epistemic reading, raising verbs, can be derived from verbs of perception when the following three conditions apply:

(i)   the presence of secondary predication
(ii)   the suppression of the perceiver argument through detransitivisation
(iii)   cognitive shift from a physical to a mental process.

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[4] It is interesting to note, given the constant renewal process of grammatical change, that the modern French equivalent of 'pretend' is *faire semblant*, in other words a (re-)causativisation of the *sembler* predicate.

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