An iconic, analogical approach to grammaticalization

Olga Fischer

ACLC, University of Amsterdam

This paper addresses a number of problems connected with the 'apparatus' used in grammaticalization theory. It will be argued that we get a better grip on what happens in processes of grammaticalization (and its 'opposite' lexicalization) if the process is viewed in terms of analogical processes, which are part of our general cognitive abilities. These analogical processes are connected with the modes of iconic and indexical thinking, which are prior to and underlie the mode of symbolic thinking (cf. Deacon 1997). I will make use of a simple analogical or usage-based grammar model, in which a distinction is made between processes taking place on a *token* level and those taking place on a *type* level. The model also involves taking more notice of the *form* of linguistic signs and of the *synchronic* grammar system at each stage of the grammaticalization process. This model will then be used on a classic example of grammaticalization (or subjectification), involving the modal verbs in the history of English. It will show that analogy lies at the basis of this grammaticalization process, and it will illustrate at the same time that the problems with scope, noted by Tabor and Traugott (1998), can also be dealt with if the process is seen as being steered by analogy.

1. Introduction

The number of phenomena which are gathered together under the term 'grammaticalization' is quite large and in some ways quite diverse. It includes such processes as:

(1) i.   the development of syntax out of discourse
     ii. the grammaticalization of lexical items into function words
     iii. clause combining and clause fusion
     iv. subjectification

For all these different types similar motivating factors have been suggested, similar principles (e.g. unidirectionality), and similar clines and hierarchies. It is evident that not all of these factors work out neatly in practice for each particular type of grammaticalization. Thus, Tabor and Traugott (1998) have suggested that one of Lehmann's parameters, the parameter of scope reduction, does not work in (iv) subjectification, where we see scope increase rather than reduction, and they suggest that it may also not be valid in some other cases of grammaticalization involving type (ii). [1]

       Other problem areas in grammaticalization studies concern the distinction between lexicalization and grammaticalization (cf. especially Himmelmann 2004, Brinton and Traugott 2005), and the issue of unidirectional reduction in clause

combining. In this paper, I will concentrate on (iv) and the issue of scope, but the approach taken here, making use of a usage-based analogical grammar, may also provide a solution to some of the other issues connected with (i)-(iv) (see for more details, Fischer 2007).

Let us first take a brief look at Lehmann's parameters. The parameters given in Table 1 illustrate the degree to which a particular linguistic item has grammaticalized (grammaticalization is a process in which a lexical item becomes more grammatical, e.g. as in the change of a verb of motion like *go* becoming a future auxiliary *gonna* when followed by an infinitive, see below).

Table 1: *Diachronic stages in the process of grammaticalization*

Parameters	Paradigmatic processes	Syntagmatic processes
Weight	(loss of) integrity	(reduction of) scope
Cohesion	(increase in) paradigmaticity	(increase in) bondedness
Variability	(loss of) paradigmatic variability: increase in o[b]ligatoriness	(decrease in) syntagmatic variability

The main features of grammaticalization characterized in this Table are given in (2):

(2) i. phonetic and semantic reduction
     ii. formal fusion of elements/clauses
     iii.scope decrease
     iv. reduction of choice within a paradigm (e.g. the French negative construction: *ne ... pas/goutte/point* etc. > reduced to *ne ...pas*)
     v. reduction of choice within a clause (elements become obligatory and fixed in position).

It is quite clear from the way the Table is set up that the issue of scope decrease (row 1, column 2) is closely tied up with the other parameters because all parameters, both on the syntagmatic and the paradigmatic plain, involve reduction. The *increase* in 'cohesion' (row 2), is in fact also a loss: a loss of choice on the paradigmatic level (only one construction remains out of a whole paradigm) and a loss of independence on the syntagmatic level, i.e. the construction gets fixed in position. A change in the parameter of scope *decrease* thus brings the whole scheme out of balance, and is therefore a more serious matter to the model of grammaticalization than it may look at first sight.

Before turning to Lehmann's parameter of scope decrease and its applicability in cases of grammaticalization, especially in the case of (iv) above, I will first consider the relation between form and function in linguistic signs (section 2) because I believe that this relation has been neglected in studies on grammaticalization, and it will be crucial to our discussion here. In connection with this, it will be suggested that a usage-based analogical grammar model is most suited, for a number of reasons, to observe this relation and to explain change (section 3). Next, in section 4, I will show how subjectification fares within such a model, using a well-known case of subjectification as illustration, and I will discuss how the Lehmannian parameter of scope applies there, and

how analogy may be involved. The discussion will be rounded off by a brief conclusion (section 5).

2. Form and function

Some of the problems with the grammaticalization types given in (1) are connected with the 'apparatus' used in grammaticalization. To understand and move towards a solution, I will suggest that more notice should be taken of formal matters and more attention should be paid to the role of the 'speaker/hearer'. As a combination of these two factors – i.e. the role played by 'form' and by 'speaker', I would like to emphasize, in particular, that we should not neglect the overall system of grammar (or more precisely, the conventional grammar acquired by each speaker of a particular language community in the course of language acquisition), which underlies the communicative situation in which each particular process of grammaticalization takes place.

Grammaticalization linguists look at form as well as function (or meaning) but mainly from the point of view of the language as a historical object that floats through time, as it were divorced from speakers and from their system of grammar. In other words, as Janda (2001) and Joseph (2001, 2004) have emphasized, in these diachronic studies the speaker has receded into the background. In the more synchronic semantic-pragmatic approach to grammaticalization, as found in the work of Traugott (1982, 1989 etc.), and others, the speaker and the communicative situation *are* considered, but here it is the matter of form that gets rather short shrift. This approach is mainly concerned with pragmatic-semantic motivation, with functional and communicative needs. Analogical extension and formal re-analysis are seen as mere mechanisms, as instruments, not causes; what motivates language change are "speaker-hearer interactions and communicative strategies" (Hopper and Traugott 2003: 73). In other words, the emphasis is on pragmatic inferencing leading to semantic re-analysis, while a possible primary role played by form or the system is reduced or ignored: "[t]hese modifications [i.e. re-analysis and analogy at work in grammaticalization] comprise changes in interpretation […] *but not at first change in form*" (Hopper and Traugott 2003: 39, emphasis added).

This neglect of form is even more explicit in Heine et al. (1991), where grammaticalization is described as "the product of conceptual manipulation" (p. 150); it is a process "metaphorical in nature" (p. 151) and "context induced" (p. 165), in which "cognitive restructuring […] *precedes* linguistic change" (p. 174, emphasis added).

I believe that form and function are intimately related and that both need to be taken into account when explaining what a speaker does in terms of language use; and hence also when explaining what happens in terms of language change and language acquisition.

In analogy, form and function (or meaning) are equally important. Similarities between constructions, which may cause one construction to be used instead of another, are based on what they share in form as well as meaning. Because form and meaning form a whole, a meaning change may affect the form, but change may also be driven by formal requirements of the system. This is nicely illustrated on a lexical level by Coates (1987), who shows that folk-etymological changes are the product of 'analogical reformation'; they may be caused by similarities in form of as well as by similarities in

meaning: "analogy is the bridge between the entirely idiosyncratic, especially the accidentally similar, and the various degrees of regularity" (Coates 1987: 320). He further emphasizes that "the influence of meaning is never a necessary condition for A[nalogical]R[eformation] to take place" and that in fact "formal similarity is a precondition for such changes" (*ibid*. p. 324). In other words, Coates considers form even more important than meaning. Thus, for instance in the history of English, the form of *femele* changed to *female* under the influence of *male*, *covert* is now often pronounced [kəuvə:rt] under the influence of *overt*, while Middle English *pas(se)nep* became *parsnip* presumably because of *parsley* (cf. Coates 1987: 325).

   Analogies can be very concrete or quite abstract, as we will see later; that is, the analogy may be based on surface tokens as well as on schemas or types. Furthermore, in analogical thinking, language in *use* plays a very crucial role during the acquisition period. Linguistic models that make use of analogy, are always usage-based, cf. the work of Slobin (e.g. 1985a, b) and Tomasello (2003), and also Itkonen (2005), Wanner (2006). It is also important to note that analogy is a very fluid concept and therefore works quite differently from the type of global rules favoured by generative or formal linguists. Hofstadter (1995: 201) gives an example of analogical thinking and the fluidity of it on the very concrete level of language use. He describes analogy as "conceptual slippage" and argues that this slippage is important (it is not a weakness but a strength!) in order to keep language workable and flexible. It is to be preferred to a rigid system,

> And one last example from this genre, perhaps my favourite … A grocery-store checkout clerk asked me, "Plastic bag all right?", to which I replied, "Prefer a wood one … uhh, a … a *paper* one, please." Contributing towards this slip might have been the following factors: paper is made from wood pulp, grocery bags are brownish, somewhat like wood and unlike standard paper, they are also considerably "woodier" in texture than ordinary paper is, and plastic and wood are both common materials out of which many household items are made, whereas paper is not.
>
>   Substitution errors like these reveal aspects of the subterranean landscape – the hidden network of overlapping, blurred together concepts. They show us that under many circumstances, we confuse one concept with another, and this helps give a picture of what is going on when we make an analogy between different situations. The same properties of our conceptual networks as are responsible for our proneness to these conceptual-halo slips make us willing to tolerate or "forgive" a certain degree of conceptual mismatch between situations, depending on the context; we are congenitally constructed to do so – it is good for us, evolutionary speaking. My term "conceptual slippage" is in fact no more and no less than a shorthand for this notion of "context-dependent tolerance of conceptual mismatch".

I will argue that this conceptual mismatch also takes place on a more abstract level, that of the system, and that in fact this also helps to keep the system simple and transparent.

3. A sketch for an analogy-based learning mechanism for language

In order to understand what happens in grammaticalization processes, I will refer to a usage-based type of grammar, such as recently proposed by Tomasello (2003). One of the most basic and important forces according to Tomasello in the building up of a grammar system is 'pattern-finding': this is the ability by means of analogy to create abstract syntactic constructions and categories out of the concrete pieces of language children hear around them.

Pattern-finding begins in animals and humans with an awareness of iconic relations (similarities and differences) between one object and another, and with learning the indexical relation between an object and its function/use (cf. Deacon 1997). In a next stage, the *repeated correlation* between an object and its use leads to a higher-order level of iconicity and indexicality. It is a higher, more abstract level, because children learn by an *analogical generalization* that any object that looks like object *x*, is also bound to have function *y*. The comparison is now no longer based only on the immediate context but also on a collection of past experiences, on an abstraction. They begin to learn to recognize what I will call *types* from past *tokens*. Symbolic representation is one step further still in that at this level the combined iconic/indexical relation (which Anttila 2003 calls the "analogical grid") begins to be used *separately* from the individual context, object or occasion in which it was first learned. Symbolic reference happens when we can transfer the referential functions from one set to another set. Holyoak and Thagard (1995) call this 'system-mapping' (a more abstract form of pattern-finding), an ability which only develops in children from the age of three onwards, and which represents a stage not reached by other mammals (*ibid*. pp. 46ff.). System-mapping happens, for instance, when we use syntactic constructions.

Analogical rules are typically not across the board but work in local areas. Analogical learning starts with concrete situations and is based on experience, both linguistic and situational, just like the kind of analogical reasoning that we saw in Hofstadter's example above, which also depends on a situation and on previous experience. In learning, the analogies may become more and more abstract by means of what Slobin (1985a) has called 'bootstrapping'. That means that abstract patterns deduced from concrete tokens begin to form a system, provided these tokens occur frequently enough, and each abstract pattern may lead to further deeper abstract patterns. The most frequent concrete and abstract patterns (i.e. idiomatic phrases, and grammatical categories and rules respectively), as shown in (3),

(3) *automation of (a) token- and (b) type-schemas:*
    (a) idiomatic phrases such as '(s)he kicked the bucket'; 'it drives me mad'
    (b) grammatical schemas such as NP → Det Adj Noun; S → NP $_{subject}$ V NP $_{object}$

become automated and will become part of our lexical and grammatical knowledge; they will, in due course, form our language system or grammar.

On the basis of a frequency increase in particular tokens forming particular patterns, a shift on a higher, more abstract type level may take place during the process of language acquisition and beyond, leading to further changes in token frequency and a speeding up of the change in question on the level of language use.

This happened for instance when a token like *I am going to the market to buy some fish* (see 4i) occurred frequently without the indication of place in the form: *I am*

going to buy some fish, so that a re-analysis from 'actual going to a place' to 'future reference' (*gonna*) could take place, helped to a great extent by the way the system of English was already formed (i.e. the presence of many periphrastic constructions and the fixed word order of finite verbs and infinitives – a fixed order which had become the norm in early Modern English, in contrast to e.g. German or Dutch – making an interpretation as auxiliary possible and likely. Such a new interpretation was presumably also easier for the learner since two verbs placed together were a *pattern* in English and mostly seen as a unit; pattern recognition is an analogical process. In this way one structural variant (main verb + *to*-infinitive) may come to be replaced by another (auxiliary + bare infinitive). Thus, in this process a similarity in form greatly contributed to a meaning change (from concrete *going to* to future *gonna*), which was also made possible because the two constructions already shared something in meaning in the context (i.e. in (4i) future reference is implied in the purposive *to*-infinitive).

An analogical replacement on a more abstract type level from [main verb – *to*-V_{inf}] to [Aux-*to* V_{inf}] is probably local at first but when more subtypes of the construction become affected, which together form part of a more abstract schema or type, the change in these subtypes may in the same way strengthen the emerging, more abstract construction type. For instance, again concerning *going to,* this change spread from infinitives that could be collocated with concrete movement as in 4(i) and (ii), to more mental infinitives (as in 4(iii)), and next also to subjects that were inanimate or empty rather than animate and agentive, as in (iv), with the result that (iv) is now a very different construction from (i). Further developments, like the tokens given in (v) and (vi), show that the two patterns have clearly become different types, each having their own characteristic features, e.g. a mix like (vii) is not possible, and a combination of two verbs 'go' as in (v): *I am going to go* is only possible if the first 'go' is an auxiliary:

(4) i. *I am going (to the market) to buy some fish*
   ii. *I am going to marry (tomorrow)*
  iii. *I am going to like it*
  iv. *It is going to rain*
   v. *I am going to go there for sure*
  vi. *I'm gonna go there for sure*
 vii. **I'm gonna Haarlem to visit my aunt*

This change or extension in the '*going* construction' is both steered indexically (via the linking of *to* to *go* instead of to the infinitive) and iconically or analogically (via the fact that other clausal patterns of this type (i.e. auxiliary-verb patterns such as the other future pattern *I will go*) also allow both animate and inanimate subjects, and also allow both concrete and mental verbs.

In order to make the idea of such an analogical learning system a little more concrete, I will show the kinds of iconic and indexical connections that may be learned together with the learning of one lexical item in concrete situations. At first in the learning process, the connections will all be mostly concrete; at a later stage of learning more abstract connections will be formed too, leading to the formation of categories and schemas. Figure 1 shows how one token, *apple*, is iconically related to a lexical set containing tokens of other kinds of fruit (*pear* etc.) and at the same time indexically

related to other kinds of iconic sets containing tokens with which it collocates functionally and formally (*eat* etc., *red* etc.). The relations between the tokens in Figure 1 below are still on the concrete token-level, but the formation of a paradigmatic *set* of tokens *in itself* is already on a type-level (a set is indicated by its inclusion in square brackets). The token-sets are based on analogies in meaning or function (fruit, things to eat), as well as form (e.g. use of affixes, position in the sentence etc.) Apart from that, the token *apple* is also indexically (via its function) related to a set of lexical features, which will in turn, and eventually, help to define the formal type of the category 'Noun' (this is done via subsets of Noun, such as 'Count Noun', 'Inanimate Noun', 'Abstract Noun' etc.). This set of lexical features itself is built upon the learner's experience of lots of other tokens with their contiguous tokens, and all these tokens together are in turn related to more abstract types. These abstract types give information about what categories typically follow or precede a Noun (or a Verb), or, at a higher level, what phrases typically follow or precede a Noun Phrase. All this has not been shown in Figure 1, which just indicates a first stage of connections (iconic and indexical) between one word token and other token-sets (represented by unbroken arrows), and between these and other types (represented by dotted arrows).
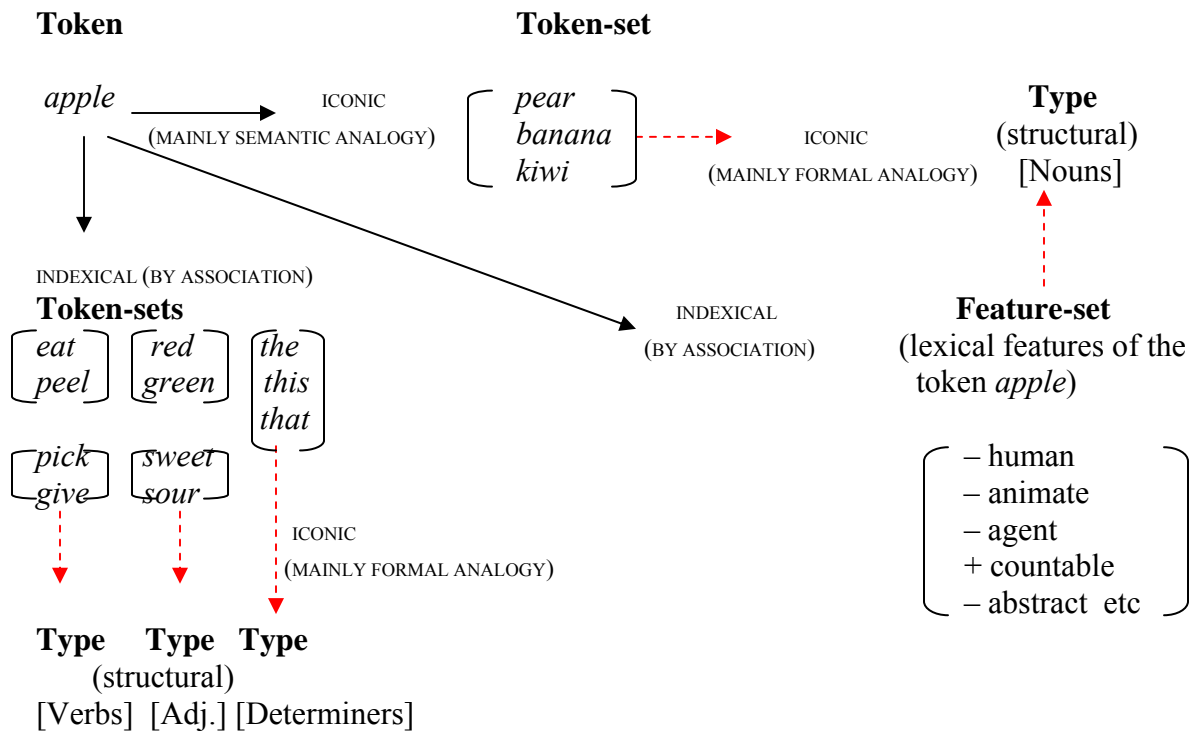
Figure 1: *possible paradigmatic (iconic) and syntagmatic (indexical) relations between the sign* apple *and other linguistic signs forming token-sets and types*

In a frame like the above, analogy should be seen as both a mechanism *and* a cause. By means of analogy we may change structures and the contents of paradigmatic sets (this is usually called 'analogical extension'), but it is also (the cognitive principle of) analogy that causes the learner to build up more abstract 'types' or schemas.[2] In other

words, in this learning model analogy is the primary force (and not re-analysis as argued in Hopper and Traugott 2003: 39). I believe that the looseness of analogy, which was seen as such a problem by many linguists in the recent past and therefore deemed unworkable (cf. Kiparsky 1974, Lightfoot 1979: 360-365, Harris and Campbell 1995: 51), will be much constrained if one thinks of analogy as taking place on different levels and of tokens and types being ordered into sets. More precisely, the analogical possibilities are tightly constrained by both the token-sets, the types on lower levels (categories) and on higher levels (syntactic constituents and constructions), and by the iconic and indexical connections between sets. In addition, the possibilities are also constrained by the fact that the sets are organized both semantically and structurally since each sign or token (because of its binary nature) is part of a formal (structural) as well as a semantic(-pragmatic) set.

      An additional advantage of this analogical learning system is that there is only one system to begin with, i.e. a lexical one. There are no separate systems for the lexicon and the syntactic rule module, as in generative linguistics. It is therefore more parsimonious from an evolutionary point of view, and it better fits present neurological findings (e.g. neural network models).

      There is a similar advantage as far as language change is concerned: the same mechanisms are now available for both morphosyntactic and lexical change. This links up with the views expressed by grammaticalization theorists, namely that grammaticalization and semantic change are intimately linked. If there are pathways of change to be found in grammaticalization, then one would expect similar ones to be found in semantic change. This is indeed the theme of Traugott and Dasher's (2002) study on semantic change, namely that semantic change shows regularities and direction, which in many ways are similar to grammaticalization.

      For the same reason, it is difficult to make a clear distinction between lexicalization and grammaticalization, as for instance Brinton and Traugott (2005) have tried to do, but not to my mind convincingly (cf. Himmelmann 2004, Fischer 2007: 227-229). Both phenomena, in fact, involve the same processes, the difference is that lexicalization involves only tokens, and the combination of these tokens leads to new lexical items, while grammaticalization involves tokens in combination with types, leading to new abstract constructions (for more information see Fischer 2007).

4. Grammaticalization and analogy-based learning

I now return to the more narrow concern of this paper: how will analogy further our understanding of the role played by scope in grammaticalization processes and the unexpected reversal of Lehmann's parameter of scope in cases of subjectification?

      I will take a closer look at a well-known case of subjectification, i.e. the development of deontic/dynamic modals into epistemic ones. What I would like to investigate is, in how far does this case present scope increase, as argued by Tabor and Traugott (1998), thus going against Lehmann's second parameter in Table 1 and against the general principle of unidirectionality (also clear from Table 1) concerning the reductions in weight and cohesion on both the paradigmatic and syntagmatic plains.

Another question is, of course, is analogy also involved here as it was in the case of *going to* illustrated in (4)?

From a purely semantic-pragmatic point of view, it is clear that there is indeed a difference in scope between present-day English epistemic modal constructions such as *He must be home by now*, where the epistemic modal has scope over the whole of the proposition and can be paraphrased as 'It is necessarily the case *that he is home by now*', and dynamic/deontic modal constructions such as *He must go to school* where the scope of *must* is restricted to the Verb Phrase (cf. Bybee et al. 1994: 198-199, Tabor and Traugott 1998: 234).[3] The question I want to raise is: how did this change take place formally? Is it simply a matter of the lexical item *must* changing in meaning/function, or is more involved? To put it differently, is there only a token involved, i.e. *must*, or also a type, e.g. the formal category to which *must* belongs, or a larger syntactic construction-type in which *must* functions as a token?

Must belongs to the category of modal auxiliaries in present-day English, and it seems clear that the epistemic development is typical for all the (core) modals. The change obviously involves a category and therefore a more abstract type. In other words, this grammaticalization is a true case of grammaticalization and cannot be interpreted as lexicalization, as for instance in the case of the development of the conjunction *while* (from Old English *þa hwile*[ACCUS] *þe* '[during] the time that' > Middle English *while* 'while'), where I would argue that *only* a token is involved, pace Hopper and Traugott (2003), who argue that it involves grammaticalization because the net result is a grammatical category – a conjunction. The other concern, whether the modal that becomes epistemic forms part of a larger construction, is a trickier one. On the surface, there doesn't seem to be much formal difference between epistemic and dynamic/deontic modal usage, after all *He must be at home* can have either meaning in the appropriate context. We will therefore have to look more closely at the historical development of the epistemic modal.

As Denison (1990) and Warner (1990, 1993) have shown, the only more or less clear epistemic examples in Old English from a formal point of view involve 'subjectless' types, i.e. instances where the modal verb appears without a subject of its own, which makes a dynamic/deontic reading difficult. First, we frequently find modals combined with an impersonal verb, which seem to have a 'raised subject' (i.e. the dative/accusative argument of the impersonal verb also functions as a argument for the modal) as in (5). The second type, (6), is also fairly frequent and concerns a construction in which the modal is combined with an intransitive infinitive, which does not assign a thematic role to its subject (which makes them like impersonals), such as copula verbs: *beon* 'be', *gewurþan* 'become, get, happen' etc. Often an empty subject *hit* 'it' is present. These verbs are close to impersonal verbs like *scamian* in (5a), which may also occur with expletive *hit*. In the constructions of (6), the copula verb is followed by a complement which is usually a *þæt*-clause.

(5) a. *þonne* **mæg hine**[ACC] **scamigan** *þære brædinge   his   hlisan* (Bo 19.46.5)
     then   can him   shame   of-the spreading of-his fame
       'then he may be ashamed of the extent of his fame
   b. *Hwy ne* **sceolde** *me*[DAT] *swa* **þyncan**? (Bo 38.119.9)
      Why not should me   so seem
      'Why should it not seem so to me?'

(6) a.*Ðeah þe **hit swa beon** mihte þæt he þas blisse   begitan mihte* (ÆLS (Ash Wed)106)
     though   it so   be   could that he those favours beget could
     'though it could be the case that he would receive those favours'
   b.*Eaðe **mæg gewurðan þæt** þu wite*[SUBJ] *þæt ic nat* (ApT 21.10)
     easily may happen   that you may-know that I not-know
     'it may easily be the case that you may know what I don't know
   c. *Gif **hit swa sceal gewurðan þæt** mann us her finde*[SUBJ] *and mann us for*
     If   it so   must happen   that 'man' us here find   and 'man' us for
     Godes naman to ðam casere læde[SUBJ](LS 34 (SevenSleepers)415)
     God's name to the emperor lead
     'If it must so happen that they find us here and lead us to the emperor because of
     God's name'

     We can draw a number of conclusions from these examples. First of all, Old
English modal verbs seem to be similar to impersonal verbs (cf. Denison 1990). Like
some other impersonal verbs in Old English they occur both 'personally', i.e. with
animate and inanimate agentive subjects (when they are dynamic/deontic), and
'impersonally', i.e. without a subject when they are epistemic, as in (6b) (cf. Fischer and
van der Leek 1983). [4] When the modal verb is used impersonally, without a nominative,
that is without an agentive-like Noun Phrase, [5] the meaning of the verb becomes more
general. Thus, *mæg* would then mean 'power exists', *sceal* 'obligation exists', *mot*
'opportunity exists' etc., which would make the meaning of these verbs more dependent
on the context and on general experience, i.e. their meaning is established by pragmatic
or logical inference: they thus convey general possibility, necessity etc.
     Secondly, it is not surprising to find these impersonal, non-agentive modals in
combination with impersonal infinitives (as in (5)), which likewise can occur without a
nominative or agent-like subject. Thus, we have two different constructions in Old
English: deontic modals that take a nominative subject and a personal infinitive, and
epistemic modals that occur without a personal subject and take an impersonal infinitive.
     Thirdly, the examples in (5) show that verbs which do take an agentive subject
role, like *come,* could not be combined with an *impersonally used* (i.e. epistemic) modal
verb that did not have an agentive subject role. In other words, epistemic modals with
personal subjects, of the type *He must come soon (no doubt about it*), could not yet occur
in Old English because in this case the modal and the infinitive had different thematic
'subject' roles, expressed by different inflexions. Again it is not surprising to find that
clear evidence for an epistemic modal with a personal subject only becomes available in
Middle English, at the same time as 'Subject-raising' structures with verbs like *seem*
begin to occur, i.e. in Old English only *Him seemed that …* was possible, *He seemed to*
…. only became current in the late Middle English period.
     Fourth, what I find most interesting about the examples in (6) is that the
impersonal modal verb, followed by an agent-less infinitive, occurs with a *þæt*-clause
which depends on the infinitive. Here we have explicit evidence for a *biclausal* structure,
which cannot be attested for deontic/dynamic modals. I checked all the modal verbs in
Old English (in The York-Toronto-Helsinki Parsed Corpus of Old English Prose (and
more cursorily in the Dictionary of Old English Corpus) but found no examples of a
modal verb immediately followed by a *þæt*-clause except with the marginal modal *willan*

'want'. So I found no examples of *I can, I may, I shall* etc. + *þæt*-clause. Biclausal constructions of the type illustrated in (6), however, are relatively frequent in Old English, especially with *magan* 'may'. They suggest that this was the only way to express epistemicity if the infinitival object/complement of the epistemic modal was not itself an agent-less or impersonal verb. One could say that the structure shown in (6) performed a kind of 'bridge' function. The modal (including the impersonally used modal) could not be combined with a *þæt*-clause. The solution, therefore, was to combine the modal with an *impersonal* infinitive or a copula like *be*, which *could* take a *þæt*-clause.

Returning now to the problem of scope increase in the subjectification of the modals, I propose, on the strength of the considerations I have enumerated above, that epistemic usage in combination with personal, agentive verbs arose in Old English via an earlier biclausal structure consisting of an impersonal modal verb followed by an agentless infinitive/copula + *þæt*-clause, i.e. the type illustrated in (6). The reason that the epistemic modals become difficult to distinguish in late Middle English from the other deontic/dynamic uses, is because they begin to occur in the same type of clauses. This was due to a number of related factors, having to do with changes in the grammatical system of Middle English. These factors are: (a) the rise of structural subjects, so that any semantic argument could now become a subject;[6] (b) the loss of impersonal verb constructions, which means that constructions like *Him likes* changed into *He likes*, and *Him may like* became *He may like*; (c) the emergence of 'subject-raising' constructions with verbs like *seem, happen*. Due to these three changes, the construction of (6), which was similar to the 'non-raised' *seem*-construction, *by analogy* also began to appear in 'raised' constructions, so that *It may be that he comes* began to be replaced by *He may come*, no doubt strengthened by the fact that in dynamic/deontic use this construction already was very frequent.

In other words, the occurrence of agentive-like epistemic modal constructions in later English is not a *direct* development concerned solely with the behaviour of the modal verb, it is not a gradual grammaticalization process, rather it is a *replacement of a construction* due to a formal analogy with the personal construction containing dynamic/deontic modals (the type '*He can* [is able to] *swim*'), and due to analogy with 'Subject-raising' structures with verbs like *seem*.

In Middle English these replacements thus became possible because of the rise of the structural subject. This analogy must have been greatly helped by the fact that the personal deontic/dynamic modal constructions must have been far more frequent in the linguistic data available to the language learner. This replacement is largely a question of economy. As Plank (1985) has argued, it is natural for marked constructions to be structured as much as possible analogous to unmarked ones. Since epistemic and deontic/dynamic modality are expressed by means of the same verbs, and since deontic modals themselves can be *subjectively* deontic (cf. note 3), it is not surprising for the epistemically used modals to conform to the structure used for the deontic/dynamic ones, especially when taking into account the system developments sketched above. The development also falls in with the 'Minimize Form' principle of Hawkins (2004: 38).

Minimize Forms (MiF)

The human processor prefers to minimize the formal complexity of each
linguistic form F (its phoneme, morpheme, word, or phrasal units) and the

11

number of forms with unique conventionalized property assignments, thereby assigning more properties to fewer forms. These minimizations apply in proportion to the ease with which a given property P can be assigned in processing to a given F.

If we accept this development for the epistemic modals, we also have an explanation for the problem of scope because the scenario I have sketched here brings the epistemic development in line with the generally accepted behaviour of scope in grammaticalization processes. The development as I have described it here shows that the epistemic modal was at first in a higher clause than the proposition which depended on it (i.e. the *þæt*-clause), unlike the dynamic/deontic modal which was in the same clause as its infinitival object/complement. This naturally entailed that the epistemic modal had a larger scope since it was placed outside the actual proposition. In other words the scope possibilities of the modal verb were formally the same, whether it had epistemic or dynamic/deontic sense. They both governed an infinitive, but it was only in structures like (6) that the infinitival object of the modal verb included a *þæt*-clause, which contained the actual proposition. So the scope concerns in both cases the immediate constituent of the modal verb. In Middle English, the epistemic structure of (6) begins to be replaced by the 'raised' construction which had the same form as the already existing dynamic/deontic structure. In this 'raised' construction, the modal has now become a part of the proposition that it first had scope over in the form of the *þæt*-clause. In other words, this formal replacement takes place with the semantics and the scope of the full biclausal *þæt*-clause structure preserved. Because there was a biclausal intermediate stage that made this development possible, one cannot maintain that this change from deontic/dynamic to epistemic involves scope increase. It does, ultimately, but *not by a direct route*. The unidirectional parameter of scope can therefore be maintained in this particular case in the sense that there was neither increase nor decrease. Instead, we have scope stability.

It remains to be seen whether this solution is also possible for other cases of scope increase involving the development of epistemic modals elsewhere and other cases involving subjectification, such as the development of pragmatic makers. This question will have to be answered by future research (but for some answers see Fischer 2007).

An interesting piece of evidence, however, concerning the subjectification of modals is the different forms used in some English-based creoles for deontic and epistemic *may* and *must*. Edhard (2004) and Winford (2000) show this for the Suriname creole Sranan Tongo. Edhard has found unequivocal epistemic uses of both *can* and *must* only in twentieth-century documents, but in both cases the forms used are part of a larger construction,

(7) a. *a kan de fanowdu fu tan wakti* (*Waktitoren*, Edhard 2004: 45)
      it can be necessary to stay wait
     'it may be necessary to keep waiting'
   b.*a musu de taki a sondu nanga a sari di   den ben   kon   de na ini …*
                                                          (*Waktitoren*, Edhard 2004: 50)
      it must be that the sin   and   the sad that they been   come be at in
      'it must be that the sin and sorrow that they had gotten into …

Winford (2000; 72-75, 83ff.) has looked in more detail at contemporary uses of epistemic *kan* and *musu* in Sranan Tongo and has found only a rare use of some counterfactual past tenses (*kan ben/musu ben, ben kan/ben musu*), which may border on epistemic usage (note the use of perfective *ben* < 'been' here). He writes: "neither *kan* nor *musu* … seems to have developed clear epistemic senses when used in combination with *ben*, though it is possible that they are moving in this direction" (p. 84). He continues (p. 92): "their [i.e. the modals *kan, musu*] use as auxiliaries in this [epistemic] sense appears to be possible primarily with stative verbs, though even this use is rare in my data … However, they appear freely in constructions such as *a kan/musu de taki S*: 'it may/must be the case that S'", that is, with a *that*-clause.

(8) *a kan (de) taki Jan ben sribi kba* (Winford 2000: 94)
     it can (be) the-case-that John PAST sleep already
     'it may be that John was already asleep/John may already have been asleep'

In other words, it looks as if Sranan is still at a very early, biclausal, stage of the epistemic use of English-based core modals, similar to what we have seen in Old English in the examples in (6).

     Finally, the occurrence of epistemic adverbs which are a contraction of 'may' +'be', such as English *maybe*, French *peut-être*, Macedonian *možebi*, Polish *może* (< *może być*), Sranan *kande* lit. 'can be', or of 'may'+ impersonal 'happen' as in English archaic *mayhap*, Dutch *misschien* and Swedish *kanske*, or a contraction from 'may'+'that' as in Serbian *možda* < *može da*,[7] shows that the route to these adverbs must also have been similar to the route taken in Old English, i.e. a modal in combination with 'be, happen' or with a complementizer like 'that'.

6. Concluding remarks

I have shown that an analogical approach explains the awkward behaviour of scope in the modals case. In addition, it takes into account other problems noted in connection with grammaticalization. An increasing number of formal and/or historical linguists believe that grammaticalization should be considered an *epiphenomenon* rather than a mechanism of change in and by itself. What we have seen in the case of the modals is that there was not a slow gradual, independent process at work in which the modal verbs grammaticalized; rather what we witnessed is a replacement of one construction by another due to semantic and formal similarities between them, i.e. a replacement which is based on analogical thinking. Thus, the process is not independent and strictly unidirectional, rather it is caused by changes taking place elsewhere in the grammatical system which enabled analogical restructuring to take place.

     Briefly summarizing, I would stress that the whole notion of grammaticalization as an independent mechanism of change has been called into question. It has been suggested here that the shifts or stages in a grammaticalization process may perhaps more easily be explained by the workings of analogy (i.e. the 'analogical grid', which contains indexical as well as iconic relations)[8] and frequency (in relation to economy). Analogy is seen as a cause as well as a mechanism. The process of analogy involves form as well as

13

meaning, which are seen as indivisible in any linguistic sign, and it plays a role both in language *use* (as analogical extension) and as a cognitive principle in the mind of the language *user*.[9] I see the analogical process as a very basic cognitive ability, and a very old one from an evolutionary point of view, cf. Deacon (1997)). Finally, it has been shown that the analogical process can only be explained from the forms and the meanings that analogous structures have for speakers within their synchronic system of grammar and within their communicative situation. It has been argued here that analogy itself together with frequency helps build up this system.

Notes

[1] There is no space to discuss that here but more details concerning scope problems and type (1)ii can be found in Fischer (2007: chapter 6).

[2] As Deacon (1997) makes clear, the ability to see similarities and differences on the one hand, and cause and effect relations on the other between objects (also known as iconic and indexical relations respectively) is evolutionary very old, and is a cognitive ability shared by all mammals and even lower animals.

[3] Purely deontic modals are more difficult to classify because the interpretation depends on the subject selected. Thus 'must' in *I must go home now*, has narrow scope (the VP only) because the speaker is also the agent (i.e. the modal is more dynamic), while in *He must go home*, expressing the speaker's will, it has scope over the whole of the proposition, and could therefore be called subjectively deontic.

[4] For instance the impersonal verb *ofhreowan,* occurs in three different construction types:
　　(a)　without any nominative subject:
　　　　him[DAT] *ofhreow*　　*þæs mannes*[GEN] (ÆCHom I 13 281.12
　　　　to-him　　pity-existed　because-of-the man
　　(b)　with the source/cause argument as nominative subject:
　　　　þa ofhreow þam munece[DAT] *þæs hreoflian mægenleast*[NOM] (ÆCHom I 23 369 139)
　　　　then brought-pity to-the monk　the leper's　feebleness
　　(c)　with the experiencer argument as subject:
　　　　se mæssepreost[NOM] *þæs mannes*[GEN] *ofhreow* (ÆLS(Oswald) 262)
　　　　the priest　　　　　because-of-the man　felt-pity
Not all impersonal verbs are found with all three types. This is also true for the modal verbs. They may be used without a nominative NP in both Old and Middle English (cf. type [a], see Warner 1993: 102). They occur both with an inanimate subject (type [b]) and an animate subject (type [c]), when they are used dynamically. Concerning type (a), this only occurs with a complement clause as 'object', the status of which is difficult to determine since it is case-less (cf. Denison 1990: 140-143). The similarity with impersonals is also not entirely straightforward, but this is because the modal verbs are already semantically idiosyncratic in some respects. Denison (1990: 143) suggests a similar classification for the modals as impersonals but hesitates to accept it fully because of the uncertainty about the existence of a truly subjectless (a) type.

[5] I use 'agentive' with some hesitation because the animate and inanimate nominative subject also carry the thematic role of 'experiencer' and 'cause' respectively. The point I wish to make is that they are both seen as the source of the action expressed by the verb, the means by which an action comes about. In terms of Hopper and Thompson (1980), they are more transitive than the subjectless type, which is intransitive and stative.

[6] In Old English only agent roles could appear as a subject (taking nominative case), and also patient roles could appear in the nominative in passive constructions, presumably because the passive participle was still more of an adjectival phrase. The role of theme, source/cause, or

experiencer was not found in the nominative, but was given as a dative, accusative or genitive case.

[7] The Slavonic data are taken from van der Auwera *et al.* (2005). Of interest here is the fact that Dutch *misschien* is still often followed by 'that' especially in the spoken language.

[8] Note that these iconic and indexical relations include metaphorical and metonymic mechanisms, i.e. the mechanisms which are generally seen as most important in grammaticalization. Pragmatic inferencing, also considered a primary factor, is likewise essentially a metonymic process.

[9] In this connection, it is interesting to note that Kirby (1999: 12-13) draws attention, referring to Hyman (1984) to a distinction between language use and the language user as far as 'function' is concerned. For functional linguists function usually refers to the fit between language structure and language *use* but it can also be defined as the fit between structure and the *users* of language, which involves a fit between between structure and the way our brains work.

References

Anttila, R. 2003. "Analogy: The warp and woof of cognition". In *The Handbook of Historical Linguistics*, B.D. Joseph and R.D. Janda (eds), 425-440. Oxford: Blackwell.

Auwera, J. van de, Schalley, E. and Nuyts, J. 2005. "Epistemic possibility in a Slavonic parallel corpus - a pilot study". In *Modality in Slavonic Languages. New Perspectives*, B. Hansen and P. Karlík (eds), 201-218. Munich: Otto Sagner.

Brinton, L. J. and Traugott E.C. 2005. *Lexicalization and Language Change*. Cambridge: Cambridge University Press.

Bybee, J., Perkins, R. and Pagliuca, W. 1994. *The Evolution of Grammar. Tense, Aspect, and Modality in the Languages of the World*. Chicago: University of Chicago Press.

Coates, R. 1987. "Pragmatic sources of analogical reformation". *Journal of Linguistics* 23**:** 319-340.

Deacon, T. W. 1997. *The Symbolic Species. The Co-Evolution of Language and the Brain.* New York: Norton.

Denison, D. 1990. "Auxiliary + impersonal in Old English", *Folia Linguistica Historica* 9: 139-166.

Edhard, A. 2004. "Semantic modality map for Sranan Tongo", MA Thesis, English Department, Faculty of Humanities, University of Amsterdam.

Fischer, O.C.M. 2007. *Morphosyntactic Change. Functional and Formal Perspectives.* Oxford: Oxford University Press.

Fischer, O.C.M. and van der Leek, F.C. 1983. "The demise of the Old English impersonal construction". *Journal of Linguistics* 19: 337-368.

Harris, A.C. and Campbell, L. 1995. *Historical Syntax in Cross-Linguistic Perspective.* Cambridge: Cambridge University Press.

Hawkins, J.A. 2004. *Efficiency and Complexity in Grammars.* Oxford: Oxford University Press.

Heine, B, Claudi, U. and Hünnemeyer, F. 1991. "From cognition to grammar – Evidence from African languages". In *Approaches to Grammaticalization*. Vol. I, E.C. Traugott and B. Heine (eds), 149-187. Amsterdam: Benjamins.

Himmelmann N.P. 2004. "Lexicalization and grammaticalization: Opposite or orthogonal?". In *What Makes Grammaticalization? A Look from its Fringes and*

its Components, W. Bisang, N. P. Himmelmann and B. Wiemer (eds), 21-42. Berlin: Mouton de Gruyter.

Hofstadter, D. 1995. *Fluid Concepts and Creative Analogies. Computer Models of the Fundamental Mechanisms of Thought*. New York: Basic Books.

Holyoak, K. J. and Thagard, P. 1995. *Mental Leaps. Analogy in Creative Thought.* Cambridge Mass.: MIT Press.

Hopper, P.J. and Thompson, S.A. 1980. "Transitivity in grammar and discourse". *Language* 56**:** 251-299.

Hopper, P.J. and Traugott, E.C. 2003 [1993]. *Grammaticalization*. Cambridge: Cambridge University Press.

Hyman, L. 1984. "Form and substance in language universals." In *Explanations for Language Universals*, B. Butterworth, B. Comrie and O. Dahl (eds), 67-85. The Hague: Mouton.

Itkonen, E. 2005. *Analogy as Structure and Process.* Amsterdam: Benjamins.

Janda, R.D. 2001. "Beyond 'pathways' and 'unidirectionality': On the discontinuity of language transmission and the counterability of grammaticalization". *Language Sciences* 23: 265-340.

Joseph, B.D. 2001. "Is there such a thing as 'grammaticalization'?". *Language Sciences* 23: 163-186.

Joseph, B.D. 2004. "Rescuing traditional historical linguistics from grammaticalization theory". In *Up and Down the Cline –The Nature of Grammaticalization,* O. Fischer , M. Norde and H. Perridon (eds), 45-71. Amsterdam: Benjamins.

Kiparsky, P. 1974. "Remarks on analogical change". In *Historical Linguistics II,* J.M. Anderson and C. Jones (eds), 257-275. Amsterdam: North Holland Publishing.

Kirby, S. 1999. *Function, Selection and Innateness. The Emergence of Language Universals*. Oxford: Oxford University Press.

Lightfoot, D.W. 1979. *Principles of Diachronic Syntax*. Cambridge: Cambridge University Press.

Plank, F.1985. "Prädikativ und Koprädikativ", *Zeitschrift für germanische Linguistik* 13: 154-185.

Slobin, D.I. 1985a. "Crosslinguistic evidence for the Language-Making Capacity", in: D. Slobin (ed.), 1158-1256.

Slobin, D.I. (ed.) 1985b. *The Crosslinguistic Study of Language Acquisition. Vol. 2. Theoretical Issues.* Mahwah N.J.: Erlbaum Associates.

Tabor, W. and Traugott, E.C. 1998. "Structural scope expansion and grammaticalization". In *The Limits of Grammaticalization*, A. Giacalone Ramat and P. J. Hopper (eds), 229-272. Amsterdam: Benjamins.

Tomasello, M. 2003. *Constructing a Language. A Usage-Based Theory of Language Acquisition*. Cambridge Mass.: Harvard University Press.

Traugott, E.C. 1982. "From propositional to textual and expressive meanings: Some semantic-pragmatic aspects of grammaticalization". In *Perspectives on Historical Linguistics*, W.P. Lehmann and Y. Malkiel (eds), 245-271. Amsterdam: Benjamins.

Traugott, E.C. 1989. "On the rise of epistemic meanings in English: An example of subjectification in semantic change". *Language* 65: 31-55.

Traugott, E.C. and Dasher R.B. 2002. *Regularity in Semantic Change.* Cambridge: Cambridge University Press.

Wanner, D. 2006. *The Power of Analogy. An Essay on Historical Linguistics.* Berlin: Mouton de Gruyter.

Warner, A.R. 1990. "Reworking the history of English auxiliaries". In *Papers from the 5th International Conference on English Historical Linguistics, Cambridge, 6-9 April 1987*, S. Adamson, V. Law, N. Vincent and S. Wright (eds), 537-558. Amsterdam: Benjamins.

Warner, A.R. 1993 *English Auxiliaries. Structure and History.* Cambridge: Cambridge University Press

Winford, D. 2000. "Irrealis in Sranan: Mood and modality in a radical creole". *Journal of Pidgin and Creole Languages* 15: 63-125.

Corpora

The York-Toronto-Helsinki Parsed Corpus of Old English Prose (http:// www-users.york.ac.uk/~lang22/YcoeHome1.htm)
The Dictionary of Old English Corpus (http://ets.umdl.umich.edu/o/oec/)
ICE-GB: the International Corpus of English: the British component