

Discourse and Prefixation

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1 Introduction

This paper discusses semantic properties of a number of prefixed verbs in Hungarian. It is a study on specificity/familiarity properties displayed by the internal arguments of such verbs, in contradistinction with arguments of the unprefixed counterparts of these verbs. The phenomenon, termed as the Specificity Effect (SE) by É.Kiss (this volume) is the dual of the Definiteness Effect (DE), for two reasons: (i) the unprefixed variants of the relevant class of verbs are DE verbs; (ii) prefixed verbs require that their arguments should be familiar or specific (as opposed to DE verbs that require indefinite/weak NPs as arguments). In particular, this paper examines indefinite NPs as arguments of prefixed verbs, and develops an account of their specificity properties. In particular, prefixed verbs have been defined as satisfying existence presuppositions by Katalin É.Kiss (this volume). I will argue that only a subclass of such verbs (verbs with affected objects) can be said to trigger existential presuppositions comparable to those of factive verbs. Another subclass (verbs with effected objects), I contend, is to be related to epistemic alternatives (following a statement in Kiefer (1983)). Sentences containing prefixed verbs will be examined with respect to discourse relations. One of the corollaries of the work reported in this paper is that sentences with DE verbs are appropriate to introduce new discourse topics, and that sentences containing prefixed verbs are appropriate as discourse continuations. This contrast in discourse relations falls into place (i) if presupposition is understood as anaphora¹ (with one class of prefixed verbs) and (ii) if prefixed verbs from the other class are said to operate on epistemic alternatives compatible with previous discourse.

Section 2 presents the relevant set of data, together with earlier analyses, and a reconstruction of the analysis in Szabolcsi (1986) in terms of the event ontology of Moens—Steedman (1988). Section 3 the SE of affected objects is explained in partial dynamic logic as an instance of restricted quantification. Section 4 provides an analysis of effected objects as related to sets of epistemic alternatives compatible with previous discourse. The role of times in dynamic frameworks will be briefly examined; in particular, dynamic predicate logic with temporal variables is compared to the system developed in Crouch (1993), where information states are allowed to change over time. Conclusions and questions for further research will be given in 4.4.

2 The Data

This section presents the relevant set of data accompanied by a synopsis of previous analyses by Szabolcsi, and some comments of my own (in 2.1). In part 2.2 I reconstruct Szabolcsi's pseudo-verb analysis for prefixed verbs, and I

¹cf. van der Sandt (1992)

argue that it is necessary to distinguish between two kinds of change with SE verbs.

Before presenting the data proper some terminology is introduced. Familiarity and novelty are understood as in Heim (1982) (exact definitions will be given in 3). Specificity is defined as in Enç (1991): a discourse referent is said to be *specific* if it is a member of some previously introduced set. The term *familiarity* will be used both for familiarity proper and for specificity when contrasted with novelty. Verbs without prefixes will be termed bare verbs, and sentences containing them *b*-sentences. Sentences with prefixed verbs that show the relevant SE will be called *meg*-sentences, from the verbal prefix *meg*, a purely aspectual prefix (as opposed to other prefixes that also express some kind of directionality). Verbs of becoming and creation (bare or prefixed) will be termed BC verbs.

2.1 Prefixation and familiarity

The internal arguments of certain prefixed Hungarian verbs denote discourse referents that are in some sense familiar from previous context. The internal arguments of the unprefixed variants of the same verbs can be either familiar or new, depending on other factors in discourse. The point is, the familiarity of arguments of *prefixed* verbs seems to be related to the verb itself.

The following is the inventory of relevant phenomena:

- (1) a. *Érkezett egy vendég*
 Arrived one guest
 “There arrived a guest”
 b. *Meg-érkezett egy vendég*
 pfx-arrived one guest
 “There arrived one (of the) guest(s)”

(Example from Szabolcsi (1986))

The relevant difference between (1a) and (1b) involves the novelty—familiarity properties of subject NPs. The indefinite in (1b) is specific in the sense of Enç: the sentence says that some member of a previously defined (i.e. invited) set of guests has arrived. Therefore one could argue that only (1b) is appropriate in a European cultural setting; since the discourse referent in (1a) is newly introduced into the discourse this referent could not have belonged to the set of previously invited people. Hence, as noted by Szabolcsi, (1a) is appropriate only in settings where any unexpected arrival is accepted as a guest.² It should be noted here that the subjects of the unaccusative verbs *érkezik* (“arrive”) and *meg-érkezik* (pfx-arrive) are involved in the same contrast as the direct objects

²According to I. Kenesei (p.c.) (1a) is appropriate in contexts where new arrivals (i.e. clients) are accepted, and even expected, e.g. as uttered by hotel staff.

of (2a–b) and (3a–b) below therefore it is appropriate to speak of familiarity properties of *internal* arguments.

The following pair seems to involve the familiarity–novelty distinction both at the level of individuals and at the level of predicates:

- (2) a. Anna hozott egy asztalt
 Anna brought one table-Acc
 “Anna has brought a table”
 b. Anna be-hozott egy asztalt
 Anna pfx-brought one table-Acc
 “Anna has brought in a table”

(Inspired by Anna Szabolcsi)

(2a) introduces a new discourse referent whereas the direct object of (2b) can be taken to be either familiar or specific. In addition the discourse referent of (2a) can extend the extension of *asztal*: (2a) is appropriate in a situation where for instance a cardboard box is brought in. That object will be said to belong to the extension of *asztal* in virtue of the utterance of (2a). No such thing is possible with (2b): the discourse referent of this sentence has to be in the extension of *asztal* prior to the utterance of the sentence. The phenomenon in (2a) can be termed as *predicative novelty*: some new discourse referent is newly introduced in the extension of a predicate as well.

Arguably under certain pragmatic conditions (1a) can also be shown to have the predicative novelty property. If any newly arriving person is accepted as a guest in some culture then (1a) is appropriate and the newly introduced discourse referent indeed extends the extension of *vendég* and we have a similar effect as with (2a).

Partial dynamic frameworks can provide the necessary conditions of predicative novelty as will be shown in the next section. Predicative novelty however implies an additional condition that cannot be captured with the operation that will be made use of. In a situation where a table is brought in and (2a) is uttered, the discourse referent introduced in (2a) will be just as new in the extension of *table* as a cardboard box. We cannot say however that in this situation this object will be renamed as a table by uttering (2a). The utterance of (2a) in the situation of bringing a cardboard box has a strong performative effect. I have no ready solution to this problem; I can suggest however that it could be solved along the lines of Chierchia and McConnell–Ginet (1993)’s proposal.

- (3) a. János talált egy hibát a programban
 John found one error-Acc the program-in
 “John found an (arbitrary) error in the program”
 b. János meg-talált egy hibát a programban
 John pfx-found one error-Acc the program-in
 “John found an error (one of a previously known set)
 in the program”

(3a–b) is perhaps the clearest example of the novelty—familiarity distinction discussed in this paper: (3a) introduces a new discourse referent for *egy hiba*. Thus (3a) says that the existence of an error becomes known after and *because of* John’s finding it. (3b) provides a discourse referent which is an arbitrary member of a previously known set of errors. If described with a *meg*-sentence, the finding event merely *confirms* previous knowledge concerning the existence of a set.

- (4) a. János keresett egy unikornist
 John sought one unicorn-Acc
 “John sought a unicorn”
 b. János meg-keresett egy unikornist
 John pfx-sought one unicorn-Acc
 “John searched for (and found) a (certain) unicorn”

(4a) is the Hungarian variant of the classical example with intensional verbs. (4b) however contains an existence presupposition about unicorns, and the indefinite is specific.³ In addition *meg-keres* contributes to a culminated process; hence the information about finding the unicorn.

- (5) a. János lopott egy kutyát
 John stole one dog-Acc
 “John stole a dog”
 b. János el-lopott egy kutyát
 John pfx-stole one dog-Acc
 –*same*–

The sentences in (5) show the same novelty/familiarity contrast as (3) or (4). The difference between say (3b) and (5b) is that the indefinite in (5b) can inherit its specificity properties from other components of the event. Apart from the case when *egy kutyát* is a genuine specific indefinite, it is sufficient for its specificity if the location of the event or the owner of the dog is previously known. According to András Komlósy (p.c.) (5a) can be used to highlight that now John has a dog, and (5b) can be used to stress that now a dog is missing from some place. In terms of the localistic terminology of Gruber (cf. Verkuyl–Zwarts (1993)) the Goal of the event is more important with *b*-sentence, and with the *meg*-sentence it is the Source which is highlighted.

The following example differs from all previous examples in that the indefinite in (6b) is felt to be specific in spite of the fact that it denotes a discourse referent which is new in the model. On another interpretation the entire event

³ *Meg-keres* (“search and retrieve”) and *meg-talál* (“find”) involve some notion of purposeful activity which is lacking from their bare variants. This component of their lexical meanings will not be dealt with here.

described by (6b) can be termed as familiar.

- (6) a. Született egy gyerek
 Born-past one child
 “A child was born”
 b. Meg-született egy gyerek
 Pfx-born-past one child
 –*same*–

According to Perrot (1966) (6b) describes an expected event. This would mean that the entire event described by the sentence is familiar to the speaker/hearer. Since both direct objects in (6a) and (6b) denote individuals that are “new” in the model, one might try to construct scenarios where only one sentence would be appropriate. (6a) can describe an unexpected event (occurring e.g. in an airplane) or it can be used if the perspective on an event is neutral (as in statistics). (6b) on the other hand is appropriate in situations where childbirth is likely (e.g. in a hospital). (6b) in a sense shows the indirect SE that could be detected with (5b): it is also appropriate if the setting or a participant in the event is familiar.

It could be seen from the data presented in this part that prefixed verbs and their internal arguments in Hungarian show the “dual” of the Definiteness Effect in that internal arguments of prefixed verbs denote specific or familiar discourse referents.⁴ Contrary to É.Kiss (this volume) I do not claim that all prefixed verbs are presupposition triggers in the ordinary sense of this term. Instead, I argue that sentences (1)–(6) can be divided into two classes as to whether they contain affected or effected objects. *Meg*-sentences with affected objects trigger existential presuppositions; they are discussed in Section 3. *Meg*-sentences with effected objects are provisionally defined as continuations of familiar discourse topics. A systematic treatment of such sentences is given in Section 4.

2.2 Pseudo-verbs and Change

In this part I elaborate on Anna Szabolcsi’s analysis of prefixed verbs, and explore the consequences of recasting this analysis in terms of the fine structure of aspect. Before doing that I am going to show that aspect proper is separate from the SE/DE distinction of bare vs prefixed verbs. This is necessary because Hungarian prefixes are best known for their contribution terminative or inchoative aspect, and therefore the most tempting way for handling the SE/DE contrast is in terms of aspect. This temptation can be overcome if the pair *talál* (“find”) and *meg-talál* (same) is considered: both contribute to terminative aspect, yet it could be seen from (3a–b) that they show the DE/SE contrast. If one still does not want to dismiss aspect altogether one can say that the SE/DE contrast

⁴Apparently these are the strong versions of weak NPs. On the relationship between Case and strong readings of weak NPs cf. de Hoop (1992).

may have to do with the fine structure of aspect. This is also supported by the following reconstruction of Szabolcsi’s analysis.

Prefixed verbs that show the SE have been termed pseudo-verbs in Szabolcsi (1986), for the following reasons. The bare counterparts of these verbs share a component of their lexical meaning, paraphrasable as “something became known/available/created in virtue of the event I describe”. Prefixed verbs do not convey new information of this sort: it could be seen from the inventory in the previous part that they confirm previous knowledge about discourse entities, hence the label “pseudo-verb”, expressing the intuition that prefixed verbs do not describe “genuine” change.

Szabolcsi’s pseudo-verb analysis can be related to the fine structure of aspect by stating that (i) events are complex entities (i.e. adopting the event ontology of Moens–Steedman (1988)), and (ii) bare and prefixed verbs differ in the way given/new information is articulated in the fine structure of events. According to Moens and Steedman events consist in a preparatory process, a culmination point proper, and a consequent state. Intuitively, a consequent state corresponds to a state of affairs brought about by some culmination. With the aid of this terminology one can say that

- the consequent state of a bare Hungarian verb of the relevant sort contains the information that a discourse referent has become available after (and in virtue of) the event described by the sentence;
- the consequent state of a prefixed Hungarian verb of the relevant sort contains information about previously known or available discourse referents; hence, the consequent state of such a verb does not contain “new” information comparable to the information conveyed by its bare counterpart.

Given a bare Hungarian verb with terminative aspect, e.g. *talál* (“find”) and its prefixed counterpart, i.e. *meg-talál* (same) the differences in the way they describe change can be revealed by comparing (3a–b), repeated here as (7a–b).

- (7) a. János talált egy hibát a programban
 John found one error-Acc the program-in
 “John found an error in the program”
- b. János meg-talált egy hibát a programban
 John pfx-found one error-Acc the program-in
 “John found one (of the) error(s) in the program”

Sentence (7a) says that an error came to be known in virtue of John’s finding it. The consequent state of (7a) can be said to contain a new discourse referent introduced into the domain of discourse in virtue of the event described by (7a). (7b) on the other hand says that a set of errors was known to exist prior to John’s finding one member of this set. Then the finding event merely *confirms* previous knowledge about one element of a set. One might argue against Szabolcsi that the discourse referent in (7b) also became available because of John’s finding it,

only this comes as no surprise because of knowledge about the error prior to the finding event. Similarly, with (1b) the discourse referent corresponding to the guest becomes “available” at some particular location because of the arriving event, only this is nothing new because a set of guests has been established in preceding discourse.

It could be apparent from the discussion of (7) that *b*-verbs involve two kinds of change, and that neither Szabolcsi’s hypothesis nor the analysis in terms of consequent states could allow a principled distinction of the two kinds of change. Change of the first kind is a change in the state of the world, brought about by some event. The second kind involves *knowledge* about discourse referents, so it involves changes in information states. My claim is that both *b*-sentences and *meg*-sentences describe the first kind of change; they minimally differ w.r.t. the second kind of change. This entails that both kinds of sentences can describe the same event. A *b*-sentence is appropriate either if the speaker has no access to background information or is unwilling to provide it for the hearer. A *meg*-sentence is appropriate if the speaker has access to information which s/he is willing to communicate.⁵ The analysis presented in this part has been found inadequate on account of mixing up two kinds of change. I can see two ways for improving it: (i) Consequent states and everything that has to do with aspect are to be discarded, and the relevant differences are to be defined in terms of [\pm specificity] alone. (ii) Consequent states can be retained if the two kinds of change are kept separate.

I am in favour of the second option, for two reasons. First, an interesting parallel between the two kinds of change will be seen to emerge in 3.2. Second, (representations of) the two kinds of change can interact in other interesting ways (details will be given in Section 4).

3 Prefixed Verbs in Dynamic Semantics

This part contains a treatment of *meg*-sentences with affected objects. After preliminary discussions in 3.1 a partial dynamic framework is given (inspired by Beaver (1992), van den Berg (1993) and Dekker (1993)) in 3.2. It is shown that existence presuppositions and specificity properties can be defined as instances

⁵Genuinely truth-conditional differences can of course arise if the *b*-verb is a process verb or a stative verb, or if it is taken on a progressive reading:

- a. János keresett egy unikornist—(process)
“John sought a unicorn”
- b. János meg-keresett egy unikornist—(culm. process)
“John sought and found a unicorn”
- c. János egy levelet írt—(progressive)
“John was writing a letter”
János meg-írt egy levelet—(culm. process)
“John wrote a letter”

Nevertheless the contribution of prefixes to aspect is separable from their contribution to argument structure.

of more general schemata. Two consequences of a dynamic treatment will also be explored in this part. First, an interesting parallel between context change and change in the model is seen to emerge. Second, presuppositions of *meg*-sentences will be shown to be anaphoric, meaning that they are not accommodated.

3.1 *Context Change Potential vs Appropriateness*

There are a number of reasons for a treatment of *meg*-sentences in a partial dynamic framework. First of all, it is obvious that specific indefinites require a dynamic treatment that builds on the file card metaphor in Heim (1982), and extends the definition of familiarity in such a way as to include the definition of specificity from Enç (1991).

Second, arguments of prefixed verbs can have indirect specificity properties, inherited from Sources that are familiar (cf. (5b) or (6b)). Although this phenomenon is not treated in this paper, it is, I think, useful as a reminder. Third, sentences with bare and prefixed verbs are appropriate in different kinds of contexts. The interpretation of a *meg*-sentence requires more background knowledge than the interpretation of a sentence with a bare verb. It can also be argued that a *meg*-sentence does not effect the same change on context as a *b*-sentence. In order to see this let us assume that the same scenario is described with a *b*-sentence and with a *meg*-sentence. Let the scenario be John's finding an error. A speaker who has no access to background information or is unwilling to share such information can use (7a). A speaker who has access to background information and is willing to share it can use (7b). It can safely be assumed, I think, that the sum of background information and new information is in a sense constant (i.e. that context change in describing the same scenario with a *b*-sentence and a *meg*-sentence is like a zero sum game). Then one can of course say that part of the information conveyed as new by a *b*-sentence is already present in the context that precedes a *meg*-sentence.

3.2 *Specific Indefinites in Dynamic Predicate Logic*

This part contains a treatment of *meg*-sentences with affected objects. Prefixed verbs of the relevant sort are defined as presupposition triggers, and specific indefinites correspond to existential quantifiers whose domain is restricted with a context set introduced as a presupposition.

In this part I build on Heim (1982)'s novelty—familiarity distinction supplemented with a definition of specificity after Enç (1991). According to Heim's file card metaphor a discourse referent in a sentence is familiar iff its index appears (on a file card introduced) in previous discourse. A discourse referent is new if it is given a fresh file card, i.e. if it does not correspond to any previously introduced index/file card. According to the definition in Enç (1991) a discourse referent will be said to be specific iff it is the member of a previously introduced

set⁶ These definitions are implemented in a partial version of Dynamic Predicate Logic (DPL) that builds on the work in Dekker (1993), van den Berg (1991, 1993) and Beaver (1992).

In partial DPL information states correspond to sets of assignments (or to world-assignment pairs, as in Beaver (1992)). Formulae denote functions from information states into information states. The introduction of a fresh variable, contributed by an indefinite corresponds to domain extension, noted with ϵ_x (x being the new variable). Domain extension updates an information state in such a way that x extends the domain of assignment functions in that information state. The new information state will be one whose assignment functions are extensions of assignments in the initial state s (all assignments in an information state have the same domain):

$$(8) \quad s[\epsilon_x] =_{df} \{f \mid \exists g \in s: g <_x f\}$$

(An assignment f is said to extend an assignment g w.r.t. x iff $Dom(f) = Dom(g) \cup \{x\}$, and if both assign the same value to every variable apart from x .)

Existential quantification corresponds to the introduction of a new discourse entity; hence, it can be defined on the basis of domain extension. According to (9) a formula of the form $\exists x.\phi$ is interpreted in two stages: first the initial information state s is extended w.r.t. x , and then the formula ϕ is interpreted relative to the information state $s[\epsilon_x]$.

$$(9) \quad s[\exists x.\phi] = s[\epsilon_x][\phi] (= s[\epsilon_x \wedge \phi])$$

Domain extension provides necessary conditions for specificity. In order to have sufficient conditions the general schema of restricted quantification will be adopted ((10) is the definition from van den Berg (1993)). According to (10) the domain of a quantifier Q is restricted with a context set y , and this information is presuppositional (in the scope of the presupposition operator $+$).

$$(10) \quad Q_{x \subseteq y}(\phi, \psi): Q_x(+ (x \subseteq y)) \wedge (\phi, \psi)$$

If an indefinite is interpreted as introducing a new discourse referent then the context set can be equated with the domain of individuals D_e . In the case of specific indefinites the context set is the domain of a previously introduced quantifier. This mirrors quite closely the definition given in Johnsen (1987) where a quantifier is restricted either with the discourse universe E (if it is “new”) or with the smallest set a previously introduced quantifier lives on (if it is “specific”). The specific case of (10) is similar to the DRT solution of Sæbø (1994) in that the information about the context set is presupposed. Also, (10) allows for a specific indefinite to pick out *any* member in a familiar set.

⁶In terms of file change semantics Eng’s definition provides two indices for discourse referents, one at the level of individuals (urelements) and one at set level, in order to keep track of set membership for individuals (cf. Eng (1991), Sæbø (1994)). The precise version of Eng’s definition says that an indefinite is specific iff its higher order index (at LF) is familiar.

With these tools at hand the treatment of *b*-sentences and *meg*-sentences is straightforward. Arbitrary indefinites in *b*-sentences correspond to new and unrestricted discourse referents, as it can be seen from (11).

- (11) a. *János talált egy hibát* \rightsquigarrow
 (“John found an error”)
 b. $\epsilon_t \wedge t \prec t_s \wedge \epsilon_x \wedge error'(x) \wedge find'(j, x, t)$

(11b) introduces a temporal variable t that precedes speech time, and an individual discourse variable x , which picks out an error found by John at t . It can be checked that the value for x is also new in the extension of $error'$, hence it can have the property of predicative novelty, which was mentioned in 2.1.⁷

Specific indefinites in *meg*-sentences correspond to existential quantifiers (non-trivially) restricted with a context set whose existence is presupposed:

- (12) a. *János meg-talált egy hibát(+Spec)* \rightsquigarrow
 (“John found an error”)
 b. $+(\epsilon_y \wedge error'(y)) \wedge \epsilon_t \wedge t \prec t_s \wedge \epsilon_{x \subseteq y} \wedge error'(x) \wedge find'(j, x, t)$

(12) says that (i) the existence of a set of errors is presupposed and that (ii) John found one member of this set at some time $g(t)$ that precedes speech time ($g(t_s)$). It has to be noted that the presupposition operator $+$ is assumed to have the properties Beaver (1992)'s presupposition operator δ in that variable binding is possible from it. Indirectly, this allows x in the assertion part to be dependent on y .

In (11) and (12) temporal variables were introduced (this is unusual, but see Muskens (1990) and Dekker (1993), ch. 4). This was done in order to facilitate a comparison of information change and change in the model. More will be said about times and update in the next part. Here I would rather focus on the advantages of a partial dynamic treatment: (i) The contrast between indefinites in *b*-sentences and *meg*-sentences can be captured in a principled way, by resorting to restricted quantification and partiality. (ii) Presuppositions of *meg*-sentences are represented with the help of the presupposition operator known from Beaver (1992) and van den Berg (1993), which facilitates binding from the presupposition part into the assertion part. (iii) The difference between *b*-sentences and *meg*-sentences is defined solely in terms of presuppositions and novelty/familiarity. In the *b*-case the existence of an error is entailed only by an information state that already contains the information of John having found an error. If β is the translation of (11a) then we have the following:

- (13) $s \not\models error'(x)$
 $s \llbracket \beta \rrbracket \models error'(x)$

⁷To be precise the extension of $error'$ is fixed. Nevertheless $g(x)$ ($g \in s$) will be new in the set of errors introduced up to that point in discourse, for $s \llbracket error'(x) \rrbracket$ is undefined unless the domain of s contains x .

(13) states that the the existence of an error is not entailed in the information state s preceding update with β . $error'(x)$ is an existential statement: the existential quantifier cannot be used, on account of its dynamic effects.⁸

In a *meg*-sentence like (12a) the existence of a set of errors is entailed in an information state that contains the presupposition part (π) of the *meg*-sentence, prior to being updated by the sentence itself:

$$(14) \quad s \llbracket \pi \rrbracket \models error'(x)$$

(14) is indicative of the fact that presuppositions of *meg*-sentences are not accommodated; rather, they are explicitly stated in previous discourse or they can be inferred on the basis of world knowledge. If this is indeed the case then it is obvious that the statement presupposed by the *meg*-sentence is contained in the information state preceding it.

So far the difference between a *b*-sentence and a *meg*-sentence has had nothing to do with consequent states; that is, temporal discourse markers have not interfered with information change. If changes in the world are to be approximated with update operations on information states then consequent states can be defined in parallel with the entailments in (13–14). With a *b*-sentence like (11a), $error'(x)$ is entailed only after s is updated with β . Nevertheless, this entailment is preserved in *any* information state that extends $s \llbracket \beta \rrbracket$ (the information state we get after updating s with the *b*-sentence). Similarly, if (11a) is true at t then $error'(x)$ holds at any t' following t , and $error'(x)$ can be taken as a statement describing the consequent state of the event described by (11a):

$$(15) \quad \begin{array}{ll} a. & \beta \text{ is true in } s \Rightarrow \bullet \nexists s' : s' \sqsubseteq s \text{ and } \beta \text{ is true in } s'; \\ & \bullet \forall s' : s \sqsubseteq s' : P(x) \text{ is true in } s'; \\ b. & \beta \text{ is true at } t \Rightarrow \bullet \nexists t' : t' \prec t \text{ and } P(x) \text{ is true at } t'; \\ & \bullet \forall t' : t \prec t' : P(x) \text{ is true at } t'. \end{array}$$

(15) says that if a *b*-sentence β is true in an information state s or at a time t then (i) there is no preceding information state or time at which the existence of the discourse entity introduced by β can be predicated with the formula $P(x)$; (ii) every information state or time that follows s (respectively, t) is such that the existence statement $P(x)$ related to β holds. This existence statement, which is entailed by information states can be safely identified with the statement contained in the consequent state related to β .⁹

With *meg*-sentences the two kinds of change are also similar; only (obviously) they have to do with previous information and with preceding times:

$$(16) \quad \begin{array}{ll} a. & \mu \text{ is true in } s \Rightarrow \exists s' : s' \sqsubseteq s \text{ and } \pi \text{ is true in } s'; \\ b. & \mu \text{ is true at } t \Rightarrow \exists t' : t' \prec t \text{ and } \pi \text{ is true at } t'. \end{array}$$

⁸The free variable in $error'(x)$ is guaranteed to be bound by a preceding existential existential quantifier due to the property of existential disclosure (cf. Dekker (1993), ch. 4.

⁹ \sqsubseteq is a partial order on information states. For definitions and discussion cf. Dekker (1993).

According to (16) if a *meg*-sentence μ is true in an information state s or at a time t then there is an information state s' preceding s or a time t' preceding t such that the statement π presupposed by μ is true in s' , or at t' , respectively. The consequent state related to μ is the same as the one related to β ; just as with β , this state holds at all times following event time. The relevant difference is that in the case of μ this statement is not new in discourse. With a stretch of the imagination one might say that π describes a state preceding the event described by μ , and that this state belongs to the preparatory phase of this event.

The conclusion that can be drawn from (15) and (16) is that with (sentences containing) affected objects change in the model is paralleled by context change. A corollary of this is that consequent states are paralleled by formulae that are persistent w.r.t. information increase.

4 Novelty/Familiarity as Temporal Order

In this part *meg*-sentences with effected objects are considered. Part 4.1 contains an outline of the problem, with a conclusion that diverges both from Szabolcsi's analysis and É.Kiss' solution for the SE. Instead, a statement from Kiefer (1983) will be considered and elaborated in 4.2. Part 4.3 contains further remarks about *meg*-sentences with affected objects, followed by conclusions and questions for further research.

4.1 Verbs of *Becoming and Creation*

In Section 2 SE verbs were said to form two natural classes. Verbs with affected objects were defined as presupposition triggers, and verbs with effected objects were provisionally defined as providing discourse continuations, after some hints concerning novelty in the ontology vs familiarity as a discourse topic.

Arguments of BC verbs cannot be said to denote previously existing or available objects. Obviously *meg*-sentences such as (6b) cannot be said to contribute an existence statement that precedes the main event they describe, simply because effected objects are “new” in the ontology. If they convey an existence statement that has to belong to the consequent state of the event they describe, very much in the same way as with the *b*-sentence (6a) and (17a) below.

- (17) a. János írt egy cikket
 John wrote one paper-Acc
 b. János megírt egy cikket
 John pfx-wrote one paper-Acc

Intuitions concerning prefixed BC verbs and their internal arguments are supported by a negation test. It is noted in Kiefer (1983) that even definite effected

objects of BC verbs fail to convey existence presuppositions, which becomes apparent in a the test in (18):

- (18) a. János nem találta meg a hibát
 “John did not find the error”
 b. János nem írta meg a levelet
 “John did not write the letter”

(Adapted from Kiefer (1983))

According to Kiefer (18a) can presuppose the existence of the error, but (18b) cannot presuppose the existence of the letter. Kiefer states that the definite in (18b) may be familiar as a discourse topic whose existence is presupposed in some alternative possible world. This suggestion is orthogonal to the suggestion in Perrot (1966). According to Perrot sentences with prefixed BC verbs describe expected events. The two proposals will be reconciled in 4.3. Before doing that Kiefer’s suggestion will be set aside and new data will be considered in 4.2.

4.2 *Discourse relations*

In this part the relations between *meg*-sentences (with BC verbs) and preceding discourse are examined.

Meg-sentences with BC verbs are felt to be specific although the indefinites they contain cannot be specific in the ordinary sense of the word. It is stated in Perrot (1966) such sentences describe expected events. In other terms, sentence (17), repeated here as (19) can mean that it has been expected of John that he would write up a certain paper:

- (19) János meg-írt egy cikket
 John pfx-wrote one paper
 “John wrote up a paper”

One can say that a *meg*-sentence confirms previous expectations/inferences about the occurrence of an event. The following examples show that *meg*-sentences are appropriate as continuations in contexts that provide information (i) about the preparatory process of some event or (ii) modal statements about future events.

- (20) a. János addig firkált, amíg ???írt/meg-írt egy levelet
 John until scribbled until ???wrote-3sg/pfx-wrote-3sg one letter-Acc
 “John kept scribbling until he wrote a letter”
- b. János tárgyalt a kiadóval,és hat hónap múlva (meg)-írt egy cikket
 John talked the publisher-Instr and six month after (pfx) wrote
 one paper-Acc
 “John talked to the publisher and six months later he wrote
 a paper”

((20a) is from Kálmán (1994))

The main clause in (20a) describes a process and the subordinate clause describes a culminated event so that the process can be construed to belong to the preparatory phase of the culmination. According to Kálmán (1994) the *meg*-sentence that is the only appropriate discourse continuation is seen to provide only a culmination point to the process described by the main clause. The *b*-sentence on the other hand can wrap up both a preparatory phase and a culmination into one event, hence its inappropriateness in the context of the main clause. To Kálmán’s remarks I can add that the independence of *b*-sentence contradicts the construction *addig... amíg* (“until... until”) in which the first clause describes a process and the second clause adds a culmination to that process.

With (20b) both a *b*-sentence and a *meg*-sentence is appropriate. The *b*-sentence describes an event which is independent from the event of talking to the publisher. With the *meg*-sentence however some kind of link is construed between the two events. It would be tempting to define this link as the one between the clauses of (20a), i.e. to say that the first sentence describes part of the preparatory phase of writing a paper. Things are not so simple however, mainly because it is hard to see how plans can be parts of larger events (for a similar point cf. Crouch (1993)). I claim instead that a modal statement about future events can be inferred from the first sentence, and that the second sentence *verifies* this statement. The times of the two sentences are not independent; their relationship will be made clear later in this part.

For a proper treatment of *meg*-sentences it is not sufficient to state that they verify some modal statement. The following example shows that *b*-sentences are also appropriate for verification.

- (21) János kölcsönt vett fel és (fel-)épített egy házat
 John loan-Acc took up and (up-Pfx)-built one house-Acc
 “John obtained a loan and and built a house”

The inference licensed by the first conjunct of (21) is that presumably John was involved in a project for which he needed a loan. This can be verified by a *b*-sentence; then (21) can be paraphrased by saying that John built an arbitrary house. The variant with the *meg*-sentence on the other hand implies that John

built one of a set of planned (possible?) houses. Since *b*-sentences are suitable for the verification of modal statements or future plans something else is also required to account for the SE of *meg*-sentences. The differences between the two continuations in (21), and the fact that in the prefixed variant a set of planned houses seems to play a role in interpretation is suggestive of some kind of presupposition.

At this point we can return to Kiefer (1983)’s suggestion: *meg*-sentences with effected objects are said to presuppose the existence of a set in some alternative of the current world. The task of the following subsection is to re-define this statement in light of the data presented here, to implement it in partial DPL, and to explore its consequences.

4.3 Effected Objects and Epistemic Alternatives

In this part *meg*-sentences with effected objects will be defined as satisfying presuppositions related to epistemic alternatives. This account will be enriched by considerations on temporal relations; in particular, I will follow Crouch (1993) and distinguish between the time when something happens and the time when the truth of a proposition is verified.

According to Kiefer (1983) a *meg*-sentence with an effected object presupposes the existence of a set in a possible world which is an alternative to the current one. This suggestion is reinterpreted here by saying that (i) the presupposed statement is about possible future events; (ii) possibility is defined as epistemic rather than logical possibility, and is implemented in partial DPL. In this perspective a *meg*-sentence with a BC verb verifies (part of) a presupposition of the form **might**($\exists t_{t_s} \prec t \exists x \phi$). In partial DPL **might**(ϕ) is accepted in an information state *s* if it is not incompatible with currently available information and if it is possible that ϕ is accepted as true if more information becomes available. In more exact terms, **might**(ϕ) is true in an information state *s* iff there is an information state *s'* that extends *s*, and ϕ is true in *s'*.

A sentence like (19), repeated here as (22a) will be represented as (22b):

- (22) a. *János megírt egy cikket* \rightsquigarrow
 (“John wrote (up) a paper”)
 b. $+(\mathbf{might}(\epsilon_{t_1} \wedge t_{s_1} \prec t_1 \wedge \mathbf{B}(\epsilon_y \wedge \mathit{paper}'(y))))$
 $\wedge \epsilon_{t_2} \wedge t_2 \prec t_{s_2} \wedge \epsilon_{x \subseteq y} \wedge \mathit{paper}'(x) \wedge \mathit{write}'(j, x, t)$

(22b) presupposes that it is possible for a set of papers to come to exist at t_1 following some time t_{s_1} . (**B** is an operator similar to *BECOME* in Dowty (1979); as such it is a descendant of von Wright’s transformation operator **T**). The assertion part of (22b) contains the information that one of these papers came to exist in virtue of John’s writing it. This is to say that (one of) the speaker’s epistemic alternatives is compatible with the information that a set of worlds where a set of papers comes to exist at time t_1 , following some contextually given time t_{s_1} . In terms of update semantics this means that there is at least

one information state extending the current one where the existence of a set of papers can be verified. (The relationship between temporal discourse markers in the assertion and presupposition part will be made clear later. Here it has to be remarked that depending on the anchoring of t_{s_1} , the presupposition part can have a future or future-in-the-past interpretation.

(22) can also be said to confirm Perrot (1966)'s suggestion: the presupposition part subsumes the assertion part as both state that a set of some sort to comes exist at some time. The event described by the *meg*-sentence can therefore be seen as the instantiation of an event type. Then the entire formula in the assertion part of (22) can be said to be familiar, which lends support to Perrot's intuitions.

There are two problems with (22b) that are in fact different aspects of the same question. The first problem is technical: the quantifier in the scope of **might** is to bind a variable in the assertion part. The second problem is related to interpretation: it has to be guaranteed that the discourse referent introduced in the assertion part is a member of *the* set of possible discourse entities. (It was seen earlier that binding from within the presupposition part itself should be no problem.) My answer to this question hinges on the way the context change potential of prefixed verbs is defined. I propose that prefixed verbs update context in such a way that the resulting information verifies (part of) the existence of the presupposed set of discourse entities within that state itself. That is, (22a) means that a set of papers exist at some time t_1 *and* that one of these came to exist in the current state because of John's writing it. This will be made more precise after the general schema underlying (22b) is examined:

- (23) a. $s[[+\pi][[\mu]]$
 b. $+\pi = +(might(\pi'))$
 c. $\pi' = (\epsilon_{t_1} \wedge t_{s_1} \prec t_1 \wedge \epsilon_y \wedge \phi)$
 d. $\mu = \epsilon_{x \subseteq y} \wedge \epsilon_{t_2} \wedge t_2 \prec t_{s_2} \wedge \mu'$

According to (23) a *meg*-sentence with an indefinite effected object contains a presupposition part (π) and an assertion part (μ). The relevant statement in the presupposition part (π') is to be checked in some information state that extends the initial one, and at a time that follows some contextually established time t_{s_1} .

The answer to the problem of binding from the scope of **might** simply states that μ updates context in such a way that the resulting information state verifies (part of) π' itself. This means that a *meg*-sentence updates context in two ways: it eliminates epistemic alternatives incompatible with π' and it extends the initial information state in such a way that (part of) π' is true in the new information state. If we accept that the common ground consists in a set of epistemic alternatives (cf. Beaver (1992)) then a *meg*-sentence is seen to operate at a higher level by providing a link to an entire set of epistemic alternatives and by eliminating even all those alternatives that are not incompatible with ϕ' , but which would leave it unverified (perhaps for lack of information). Put in

more succinct terms, if a *meg*-sentence behaved as other presupposition triggers then it would be sufficient for it to update some information state so that only its presupposition **might**(π') should hold in the new state (i.e. π' itself need not be true in that state). In addition to that the *meg*-sentence verifies part of the statement *within* the scope of **might** as well.¹⁰ In more traditional terms, *meg*-sentences provide the information that the current world is one of those where *might*(π') and (part of) π' both hold.

It is time now to elaborate on the role of times in the representation of *meg*-sentences. The following issues will be discussed here: (i) the relationship between temporal discourse referents in the presupposition part and in the assertion part; (ii) the role of times as marking when something happens as opposed to when the truth of a statement is verified. Consequent states are mentioned only briefly here, as two things can easily be checked: first, consequent states related to bare and prefixed verbs of creation are the same; second, context change is similar to change in the model in that an existence statement is entailed in all information states extending $s[\phi]$ (where ϕ contains the translation of a BC verb), and the statement describing the consequent state is true at all times following the time of the event proper. Technically all this is possible because the existence statement π' in the presupposition part of the *meg*-sentence is true in exactly the same information state as the assertion part, and not sooner (as was the case with prefixed verbs with affected objects).

The temporal discourse markers introduced in this part are a subset of the set *Var* of variables. As such they are assumed to have the properties of individual variables: they can extend assignment functions, hence the notation ϵ_t . They are subject to restricted quantification and can be dependent upon other temporal variables. In the model they are assumed to behave as the temporal discourse referents defined in Blackburn (1992).

The presupposition part of a *meg*-sentence is about possible times beside possible sets, which becomes clear if (22b) (reproduced here as (24) is considered:

$$(24) \quad + (\mathbf{might}(\epsilon_{t_1} \wedge t_{s_1} \prec t_1 \wedge \mathbf{B}(\epsilon_y \wedge \mathit{paper}'(y)))) \\ \wedge \epsilon_{t_2} \wedge t_2 \prec t_{s_2} \wedge \epsilon_{x \subseteq y} \wedge \mathit{paper}'(x) \wedge \mathit{write}'(j, x, t)$$

According to the formula in (24) there is a possible temporal discourse marker $g(t_1)$ that follows some previously introduced discourse marker $g(t_{s_1})$ (and that a set of papers will exist at $g(t_1)$). A discourse marker $g(t_2)$ is introduced in the assertion part such that it precedes speech time $g(t_{s_2})$ and a paper is written at $g(t_2)$. t_1 and t_2 are unrelated in (24), though it is clearly desirable to establish some kind of connection between them. The obvious step is to restrict t_2 with t_1 , i.e. to make t_1 act as some kind of context set for t_2 , just as the individual

¹⁰By “part of” π' I mean that π' is about a set, and the assertion part of the *meg*-sentence is about one member of that set. Trivially π' is satisfied even if one of the elements of that set becomes known but with (22a) for instance speakers have the intuition that x , the discourse referent whose existence is checked is in fact a proper subset of the “presupposed” set y (otherwise the use of a definite would have been appropriate).

discourse marker y in the presupposition part serves as a context set for x in the assertion part. The information we have now is $t_2 \subseteq t_1$. Both t_1 and t_2 are dependent on t_{s_1} , which may serve as a temporal perspective point so that the presupposition part of (24) has some kind of future-in-the-past interpretation.

The role of the perspective point and its origin can be made more clear from the following example:

- (25) a. *János tárgyalt a kiadóval. Hat hónap múlva megírt egy könyvet.* \rightsquigarrow
 “John talked to the publisher. Six months later he wrote a book.”
 b. $\epsilon_{t_1} \wedge t_1 \prec t_s \wedge \text{talk}'(j, p, t_1) \hookrightarrow$
 c. **might**($\epsilon_{t_2} \wedge t_1 \prec t_2 \wedge \epsilon_y \wedge \text{write}'(j, y) \wedge \text{for}'(p, y)$)
 d. $\epsilon_{t_3 \subseteq t_2} \wedge t_3 = t_1 \oplus 6m \wedge \epsilon_{x \subseteq y} \wedge \text{book}'(x) \wedge \text{write}'(j, x, t_3)$

In (25) the *meg*-sentence verifies an inference licensed by the previous statement (i.e. if John met a publisher at $g(t_1)$ it is reasonable to infer that he is to write something for the publisher after $g(t_1)$). The times of the inferred statement (25b) and the *meg*-sentence (t_3) are dependent on the time of the first statement.¹¹

The following example can offer further clues for the temporal relationship between a *meg*-sentence and the statement it verifies. The time that separates statements from previous discourse and the time of a *meg*-sentence has to be “within” the time interval of the preparatory process related to the *meg*-sentence. This relationship is constrained by encyclopedical knowledge, which is shown by the oddity of (26):

- (26) a. *Két éve megmondtam, hogy Marinak gyereke lesz*
 “Two years ago I said that Mary was going to have a child.”
 b. *??Tegnap meg is született*
 “Indeed it was born yesterday”

At the beginning of this part a distinction was mentioned, which was originally introduced in Crouch (1993). It was stated that it is useful to distinguish between the time when something happens (event time) and the time when something becomes known (update time). Some arguments in favour of this move are in order before the relevant definitions are given. In Section 2 consequent states of events described by *meg*-sentences were said to involve two kinds of change: changes in states-of-affairs and changes in information states. If one wants to provide a unified account of the two kinds of change then it is indeed necessary to distinguish between event time and update time. Usually update time is equated with speech time (the time when an utterance is added to the discourse). Crouch however divides update time into speech time and *verification* time, which is the time when the truth of a proposition is verified. For Crouch such a distinction became necessary for the treatment of tense in

¹¹(25) can also serve to illustrate how *meg*-sentences can verify inferences licensed by previous statements in discourse. I shall return to this point in 4.3

conditionals: according to him, the time of the consequent in a conditional is centred on the time the antecedent is verified (and not on the time when it is uttered). In this paper it is required by the relation between a *meg*-sentence and the presupposition it verifies that one should keep track of the time when a statement is verified.¹²

In Crouch’s system truth is defined relative to an information state σ and a triple a, v, e of times (shorthand for assertion time, event time and verification time, respectively). Information states record what is verified and when, so that an information state is defined by Crouch as a series of information states that change over time (verification is monotone in that the set of verified propositions cannot decrease). Foreknowledge is excluded: a proposition is verifiable immediately after it is asserted, but not sooner ($v \geq a$). Information states are defined as sets of propositions in Crouch (1993) so there is no direct correspondence between his system and the one adopted here. The following correspondence can be established however:

$$(27) \quad \epsilon_t \wedge \phi \text{ is true in } s \text{ iff } \exists v \geq t: \sigma, v, t, t_s \models_c \phi$$

(27) states that a formula ϕ is true at some time t in partial DPL iff it can be verified at time v in an information state σ , defined as in Crouch (1993). This equivalence makes it possible for temporal discourse markers to have a distinguished role even in partial DPL: up to now they were part of formulae and were interpreted along with them in some information state. In Crouch’s system they belong to the information states themselves.

In partial DPL the temporal variable in $\epsilon_t \wedge \phi$ picks out event time rather than verification time. Since ϵ_t introduces a fresh temporal variable it seems that event time can be collapsed with the time something becomes known in partial DPL. This is not so because the time at which a formula describing an event is introduced in an information state is obviously not the same as the time when that event takes place, or the time at which the truth of a statement is checked. From this perspective Crouch’s verification times are seen as providing counting points for information states (of DPL), for keeping track of the verification process.

In partial DPL *meg*-sentences are linked to preceding discourse by updating context in such a way that ϕ from **might**(ϕ) is true in the resulting information state. In Crouch’s system this means that they construct a verifying information state for that statement, and verification time for a *meg*-sentence also serves as verification time for the ϕ . According to Crouch’s definitions **might**(ϕ) is verified in σ at a, v, e iff there is an information state σ' and times a', v', e' such that s' extends σ with respect to ϕ , and ϕ is verified in σ' at a', v', e' . A *meg*-sentence extends the current information state in exactly such a way that ϕ (i.e.

¹²Tense is anaphoric in Hungarian, therefore Crouch’s system looks promising for the treatment of other phenomena in this language. This however is a task for future research.

$\mathbf{B}(\epsilon_y \wedge \phi)$, defined in (24) is verified in the resulting information state:

$$(28) \quad \begin{array}{l} \sigma, a, v, e \quad \models_c \quad \nu \Rightarrow \\ \sigma, a, v, e' \quad \models_c \quad \mathbf{B}(\epsilon_y \wedge \phi) \end{array}$$

(28) says that every verifying information state for a *meg*-sentence ν is also a verifying information state for the statement in the scope of the epistemic operator, contained in the presupposition part of the *meg*-sentence. Apparently (28) says the same thing as the definition of *meg*-sentences in update semantics so one might ask why we should complicate things by adding a temporal dimension to information states. My answer is that the notion of verification brings into sharper focus the relationship between a *meg*-sentence and the relevant modal statement. Another argument for defining verification in this way is that *meg*-sentences contribute to information increase by eliminating possibilities rather than introducing new discourse entities. Both kinds of information increase can be modelled in partial DPL (for detailed discussion and many results, see Dekker (1993)); yet in Crouch's system the elimination of possibilities is more transparent. At this point someone might say that Crouch's system is not suited for a treatment of presuppositions, which is bad, because the statement verified by a *meg*-sentence is presuppositional. To this objection I have two answers: (i) there is a correspondence in Beaver (1992) relating $s[[+\phi]]$ to $s[[\phi]]$ which makes things safe for Crouch's system; (ii) presuppositions of *meg*-sentences can be re-defined as discourse anaphora (because no accommodation occurs). This in turn can be defined as a constraint on verification. In this way the statement in (28) can be strengthened to a biconditional: a *meg*-sentence is verified in an information state if some previous information state contains a modal statement to be verified, and if this modal statement is verified precisely in the state and at the time v that verifies the *meg*-sentence.

4.4 Loose Ends

In this part I return to *meg*-sentences with affected objects and formulate a generalization intended to cover both classes. This is followed by a brief presentation of some properties of *meg*-sentences that require further work. I will also attempt some suggestions concerning possible solutions.

Meg-sentences with affected objects were defined as presupposition triggers, and this fact was used to explain specificity properties of indefinites in internal argument positions. Presuppositions of *meg*-sentences with affected objects are existence presuppositions like those triggered by factive verbs. *Meg*-sentences with effected objects were also defined as presuppositional, with the difference that their presuppositions concerned epistemic alternatives. The general schema for both classes is the one in (23a), repeated here as (29). The two classes differ only w.r.t. the kind of statement they presuppose.

$$(29) \quad s[[+\pi]][[\mu]]$$

In Crouch’s terminology the verification relation between a *meg*-sentence and its presupposition holds also for a *meg*-sentence with an affected object. That is, this kind of *meg*-sentence update context in such a way that their presuppositions are verified in the same state and at the same time v as the *meg*-sentence itself is verified. This might seem trivial but the following examples show that a verification relation can be necessary for *meg*-sentences (and that verification can sometimes fail).

- (30) a. A készülék nem működött.
 “The appliance did not work.”
 b. János megtalálta benne a hibát
 “John found the error in it.”
 c. János kereste benne a hibát.
 “John kept looking for the error in it.”
 d. Végül kiderült, hogy nem volt bekapcsolva.
 “It turned out in the end that it was not plugged in.”

The existence of an error can be inferred from (30a). This is confirmed (and verified) by sentence *b*, but it might as well be cancelled by sentences *c–d*. From this I conclude that verification is indeed non-trivial even with seemingly standard existence presuppositions.

A careful reader may have noted that although this paper is about contrasting meanings of verbs, for the most part analyses and representations had to do with entire sentences. The question that seems to have gone unanswered is what exactly prefixed verbs contribute to the interpretation of a sentence. Nevertheless I think that an answer can be reconstructed from the way *meg*-sentences have been defined to affect context. Prefixed verbs with affected objects are presupposition triggers. Prefixed BC verbs provide higher order discourse links that operate on sets of epistemic alternatives. The kind of link I have in mind involves (i) the elimination of all alternatives where some non-modal statement does not hold and (ii) the verification of that statement. This definition entails that prefixed BC verbs provide *bridging* for discourse entities in the sense of Clark (1977). A hint for further research is that prefixed verbs could be defined as providing links between databases in a labelled deductive system (cf. Gabbay–Kempson (1992)).

Meg-sentences have been said to provide information about previously introduced discourse topics. In terms of partial DPL this can be represented in terms of anaphoric relations: *meg*-sentences with affected objects contain group anaphora (derivable from specificity as presupposition plus restricted quantification). *Meg*-sentences with BC verbs can enter three kinds of anaphoric relationships. This will become apparent if the representation in (22) is re-examined:

- (31) a. János meg-írt egy cikket \rightsquigarrow
 (“John wrote (up) a paper”)
 b. $+(\mathbf{might}(\epsilon_{t_1} \wedge t_{s_1} \prec t_1 \wedge \mathbf{B}(\epsilon_y \wedge \mathit{paper}'(y))))$
 $\wedge \epsilon_{t_2} \wedge t_2 \prec t_{s_2} \wedge \epsilon_{x \subseteq y} \wedge \mathit{paper}'(x) \wedge \mathit{write}'(j, x, t)$

First, the discourse referent denoted by x is dependent on (and anaphoric to) y . Second, the temporal variable in the assertion part is anaphoric to those in the presupposition part, i.e. it can depend both on the time that was presupposed, and on the time of some previous statement that serves as a perspective point. The relation between the time in the assertion part and the perspective point t_{s_1} depends on encyclopedical knowledge, which could be in (31) in 4.3. Third, the event described in the assertion part is subsumed by the event type in the presupposition part so that one can be seen as the instantiation of the other. A proper treatment of the last kind of relation could be envisaged either in a labelled deductive system or in a suitably rich discourse grammar framework.

In the remainder of this paper inferred existence statements will be discussed, together with possible relations with *meg*-sentences. It could be seen that the presupposition of a *meg*-sentence need not be stated explicitly; it is sufficient if it can be inferred from earlier discourse on the basis of world knowledge. (30a–b) shows that a sentence with an affected object is appropriate on the basis of inference derivable from (30a). (This had to be made explicit because up to this part only cases of effected objects have been considered.)

In 4.2 the link between preparatory processes and culminations described with *meg*-sentences was briefly mentioned. Here I suggest that this kind of relation can be subsumed under the overall pattern of a *meg*-sentence verifying a modal statement. Arguably if a *meg*-sentence provides a culmination point for a process or an event in progress then the link between the two eventualities is provided by a default inference (as in Asher (1992)).

- (32) a. János egész délután írt.
 “John was writing the whole afternoon.”
 b. ??Nyolc órára írt egy levelet
 “By eight o’clock he had written a letter.”
 c. Nyolc órára meg-írt egy levelet
 —*same*—

The two events in (32a) are independent. In (32b) the second sentence provides a culmination point for the event described in the first sentence. In my opinion the first sentence licenses the inference that eventually John will finish writing and there will be something he has written. The *b*-sentence, being independent, does not confirm this inference, and this contradicts the requirements posed by the adverbial expecting a culminated process. The *meg*-sentence in turn verifies this inference and is appropriate for the adverbial; thus its contribution is of the same pattern as with cases of modal statements: it provides the information that the current world is one where such inferences are verified, i.e. a process reaches its culmination point. The morale of this is that the link between a preparatory process and a culmination (if described with a *meg*-sentence is essentially the same as the link between a future plan or conjecture and a *meg*-sentence. This is straightforward if the progressive is defined as an intensional phenomenon requiring a default logical treatment (as the one

in Asher (1992)). Rather, the question is whether *b*-sentences are appropriate links with progressive sentences. Another problem for further research is that a process sentence and a *meg*-sentence (describing the culmination of that process) cannot be conjoined without a terminative adverbial or a connective of the right sort, like *addig... amíg* (“until... until”) in (20a). This is suggestive of a possible difference between inferences concerning modal statements and culminations, since a *meg*-sentence can verify a modal statement without having to enter particular discourse configurations, whereas if it is to verify an inference about culminations then such configurations seem to be necessary.

A puzzle for the presuppositional account of specificity is the case of what might be called indirect specificity. In the case of (5b) in Section 2 (repeated here as (33)) the internal argument of a *meg*-sentence (the Theme) can inherit its specificity properties from some familiar Source of the event.

- (33) János el-lopott egy kutyát
 John pfx-stole one dog-Acc
 “John stole a dog”

This concludes the inventory of inferred information and its relations to *meg*-sentences. A proper treatment of such cases could be envisaged in a sufficiently rich discourse grammar that allows for default inferences by some mechanism of licensing (cf. Goldberg et al. (1990)), together with a mechanism of deferred information. This could guarantee that inferred/licensed information is made use of only when and where it is required, as *b*-sentences often “ignored” pieces of information that was picked up by a *meg*-sentence.

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