

Verbs of creation in Hungarian

Verbs of creation in Hungarian generally come in pairs, the one member with a preverb (typically *meg*, a kind of perfective marker), and the other without one:

- (1) (meg)csinál [salátát] ‘make [salad]’, (meg)épít [házat] ‘build [house]’, (meg)farag [szobrot] sculpt [statue]’, (meg)fest [képet] ‘paint [picture]’, (meg)főz [czésze kávé] ‘make [cup of coffee]’, (meg)hajtogat [papírcsónakot] ‘fold [paper boat]’, (meg)ír [levelet] ‘write [letter]’, (meg)köt [harisnyát] ‘knit [pair of stockings]’, (meg)rajzol [fát] draw [tree]’, (meg)süt [süteményt] ‘bake [pastry]’, (meg)sző [hálót] spin [web]’, (meg)tervez [épületet] design [building]’
- (2) a. Rebeka (meg)épített egy házat.
Rebecca *meg*-built a house.ACC
‘Rebecca built a house.’
b. Sára (meg)faragott egy szobrot.
Sarah *meg*-sculpted a statue.ACC
Sarah sculpted a statue.’

An important property of verbs of creation is they are *temporally opaque* with respect to their internal argument (which is the argument designating the thing created). Temporal opacity means that such verbs do not permit an existentially quantified NP representing their internal argument to be existentially exported, as is illustrated by the failure of the entailments in (3), where ‘*t*’ stands for a temporal interval.

- (3) a. Rebeka (*t* alatt) épített egy házat \nrightarrow (*t* alatt) volt egy ház, amit Rebeka (meg)épített
(Rebecca built a house during *t* \nrightarrow There was a house during *t* that Rebecca built)
b. Sára (*t* alatt) faragott egy szobrot \nrightarrow (*t* alatt) volt egy szobor, amit Sára (meg)faragott
(Sarah sculpted a statue during *t* \nrightarrow There was a statue during *t* that Sarah sculpted)

Intuitively, the entailments in (3) fail because the thing created (a house, a statue) comes into existence only at the end of the act of creation, whereas it would have to exist throughout the act of creation if the entailments were valid. The entailment pattern does hold for verbs that are not verbs of creation, which are *temporally transparent* with respect to their internal argument (e.g., *megmásik* ‘climb’, *elolvas* ‘read’).

This paper has two aims. The first is to offer an analysis of temporal opacity for verbs of creation in Hungarian, and the second is to characterize a central difference between the members (the one with a preverb, the other without) of the pairs in (1).

With regard to the first aim, the strategy is to make a distinction among the physical objects in the universe of discourse between those that exist at some time or other and those that actually exist at a given time. In the case of physical objects, the force of the existential quantifier (\exists) will be taken to assert existence at some time or other, whereas an existence predicate (exist, a two-place relation between times and physical objects) will be used to pick out those objects actually existing at a given time. For a simple example, since Lajos Kossuth lived in the 19th century, the formula in (4a) is true even in 2004, whereas the formula in (4b) is false because Kossuth is not among the physical objects actually existing in 2004.

- (4) a. $\exists x[x = \text{kossuth}]$
b. exist(2004, kossuth)

The next step is to say that verbs of creation are associated with axioms that specify how the existence predicate applies to their internal argument. Taking *épít* ‘build’ as an example, if *épít* translates into a three-place relation between events *e* and two physical objects *x* (the

agent) and y (the thing built), as in (5), then the relevant axioms are given in (6). (In (6), ‘ \sqsubseteq ’ stands for the (improper) part relation, ‘ $<$ ’ for temporal precedence, and ‘ τ ’ for the temporal trace function (of an event).)

- (5) $\acute{e}p\acute{i}t$ ‘build’ $\rightsquigarrow \lambda y \lambda x \lambda e [\text{build}(e, x, y)]$
- (6) a. $\forall e \forall x \forall y [\text{build}(e, x, y) \rightarrow \text{exist}(\text{end}(\tau(e)), y)]$
(existence at end of event)
- b. $\forall e \forall x \forall y [\text{build}(e, x, y) \rightarrow \forall t [t \sqsubseteq \tau(e) \wedge t < \text{end}(\tau(e)) \rightarrow \neg \text{exist}(t, y)]]$
(no existence prior to end of event)
- c. $\forall e \forall x \forall y [\text{build}(e, x, y) \wedge \text{build}(e', x, y') \wedge e' \sqsubseteq e \wedge y' \sqsubseteq y \rightarrow \forall t [t \sqsubseteq \tau(e) \wedge \text{end}(\tau(e')) < t \rightarrow \text{exist}(t, y')]]$
(persistence of existence in event)

The effect of the first two axioms is to guarantee that the thing built (e.g., the house in (2b)) comes into existence only at the end of the building event, whereas the third axiom states that any part of the thing built that is built earlier in the event (e.g., the left wall of the house) persists to exist throughout the remainder of the event.

With the axioms in (6) in hand, we can account for why the entailment in (3a) fails. The antecedent of the implication is formalized in (7a), and the consequence in (7b), where the value of t is open:

- (7) a. $\text{Rebeka } (t \text{ alatt}) \acute{e}p\acute{i}tett \text{ egy h\acute{a}zat} \rightsquigarrow \exists e [t < \text{now} \wedge t = \tau(e) \wedge \exists y [\text{house}(y) \wedge \text{build}(e, \text{rebecca}, y)]]$
- b. $(t \text{ alatt}) \text{ volt egy h\acute{a}z, amit Rebeka (meg)\acute{e}p\acute{i}tett} \rightsquigarrow \exists e [t < \text{now} \wedge t = \tau(e) \wedge \exists y [\text{house}(y) \wedge \text{exist}(t, y) \wedge \text{build}(e, \text{rebecca}, y)]]$

If the formula in (7a) is true, the one in (7b) is false. In fact, the first two axioms in (6) guarantee that the formula in (7b) is always false, because there is a contradiction between y ’s (the house’s) existing during t and its not existing before the end of t .

The second aim of the paper concerns the characterization of a central difference between the pairs in (1). In brief, the idea is to introduce what I call *schemas* into the universe of discourse. A schema is a first-order abstract object that can be *realized* (or instantiated) by a physical object. For example, a concrete house can realize a house schema. As abstract objects, schemas are fully individuated by the properties they have, hence some schemas may be more detailed than others and some schemas may form parts of others. Applied to Hungarian, the proposal is that verbs of creation with a preverb take a schema as their internal argument and assert both that a realization of this schema is created and that the external argument knows the schema during the time of the event. If correct, this would explain the contrast in (8), where the object of *kigondol* ‘think up’ is a house schema that can be modified by a relative clause containing *meg-épít* ‘meg-build’ but not *épít* ‘build’.

- (8) a. $\text{Rebeka kigondolt egy h\acute{a}zat, amit azt\acute{a}n meg-\acute{e}p\acute{i}tett.}$
Rebecca thought-up a house.*acc* which.*acc* then *meg*-built.she
‘Rebecca thought up a house which she then built.’
- b. $\# \text{Rebeka kigondolt egy h\acute{a}zat, amit azt\acute{a}n \acute{e}p\acute{i}tett.}$

The representation of *meg-épít* is given in (9) (cf. (5)), where ‘ \mathbf{y} ’ stands for a schema and ‘ \triangleleft ’ for the realization relation between physical objects and schemas. In prose, *meg-épít* denotes a three-place relation between events e , agents x , and schemas \mathbf{y} such that there is a physical object y that x builds in e , y realizes \mathbf{y} , and x knows \mathbf{y} during the time of e .

- (9) $\text{meg-}\acute{e}p\acute{i}t$ ‘*meg*-build’ $\rightsquigarrow \lambda y \lambda x \lambda e [\exists \mathbf{y} [\text{build}(e, x, \mathbf{y}) \wedge y \triangleleft \mathbf{y} \wedge \text{know}(\tau(e), x, \mathbf{y})]]$