A Glue Semantics for Structurally Regular MWEs

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Introduction

- Waszczuk and Savary (2015) (W&S) describe how the syntax of MWEs can be analysed using the descriptive apparatus of LFG.
- But they say nothing about the semantics.
- The goal of this poster is to extend W&S's treatment by providing the semantics of idioms like *kick the bucket*, using the standard apparatus of LFG (so called 'glue' logic).

Syntax

- W&S's approach to idioms like *kick the bucket* ('die') associates constraints with the head word, for *kick the bucket* these might be as in (1):

  (1) kick : V : (↑ OBJ PRED FN) =$_c$ 'bucket' (↑ OBJ DEF) = +
  (↑ OBJ NUM) = sg ¬ (↑ OBJ SPEC)

  This is a specialisation of the normal entry for *kick*, whose direct object is required to be (a) headed by *bucket*; (b) definite; (c) singular; and to have no specifier (d) – hence only *the* is permitted, an alternative would be (↑ OBJ SPEC FN) = 'the'.
- This captures the key syntactic constraints, explaining why the idiomatic interpretation disappears if any of these constraints is violated:

  (2) a. #Sam kicked the pail.
  b. #Sam kicked a bucket.
  c. #They kicked the buckets.
  d. #Sam kicked her bucket.
- But it gives no account of the semantics of the idiom, and leaves unexplained the impossibility of clefting, relative clause formation, or pronominalisation:

  (3) a. #It was the bucket that Sam kicked.
  b. #What Sam kicked was the bucket.
  c. #The bucket that Sam kicked (was unfortunate).
  d. #Sam kicked the bucket, but Kim didn't kick it.
- This poster is intended to remedy this.

Literal Semantics

- In the standard version of LFG the syntax-semantics interface is handled by so-called 'glue logic' (e.g. Dalrymple, 2001).
- This involves associating pieces of syntactic structure with semantic 'resources'.
- Resources consist of a left-hand-side, which is a conventional semantic representation, and a right-hand-side, which is an expression indicating the combinatory possibilities.

  For example, the literal semantics of *kick*:

  (4) Conventional Semantics : Combinatorial Possibilities
  $\lambda y.\lambda x.\exists e.kick(e,y,x)$: $(\uparrow \text{SUBJ})_\sigma \multimap (\uparrow \text{OBJ})_\sigma \multimap \uparrow_\sigma$
  Abbreviation $s_\sigma \multimap o_\sigma \multimap \uparrow_\sigma$
- Intuitively, the 'glue' expression here says: to produce the semantics associated with the f-structure where *kick* appears (i.e. the clause), consume the semantics of the SUBJECT and the OBJECT, in that order.
- The 'resource sensitivity' is a way of capturing the same intuition as compositionality in semantics, but without requiring a binary structure.
- The literal interpretation of *Sam kicked the bucket* can be derived as in (5) – ignoring the derivation of *the bucket*.
- In (5) the resource associated with *the bucket* consumes that of the verb (this is standard, if *the* is associated with quantificational semantics. The $\forall H$ etc. means 'for *any* H', and will allow for scope interaction with other quantifiers, as in *Everyone$_i$ kicked the bucket she$_i$ was filling* vs. *Everyone$_i$ kicked the bucket Sam was filling*.
- To understand the mechanics of (5), note that $o_\sigma \multimap H$ in the resource for *the bucket* matches the resource that results from combining *Sam* and *kick*, $o_\sigma \multimap \uparrow_\sigma$. (It is not in any way essential that the verb should combine first with its subject in this way, but it makes for a shorter proof).

(5)
$$\dfrac{\dfrac{\lambda y.\lambda x.\exists e.kick(e,y,x) : s_\sigma \multimap o_\sigma \multimap \uparrow_\sigma \qquad Sam : s_\sigma}{\lambda x.\exists e.kick(e,Sam,x) : o_\sigma \multimap \uparrow_\sigma} \qquad \lambda P.the(b,bucket(b),P(b)) : \forall H.[o_\sigma \multimap H] \multimap H}{the(b,bucket(b),\exists e.kick(e,Sam,b)) : \uparrow_\sigma}$$

Idiomatic Semantics

- To obtain the idiomatic interpretation, we can associate the idiomatic reading of *kick* with a 'manager' resource which essentially discards the meaning associated with *the bucket*. This involves changing the glue type of *kick* so that it consumes the subject, and then consumes the resource associated with the object (rather than the other way round, as in the literal case):

  (6) $\lambda y.\lambda Q.\exists e.die(e,y) : s_\sigma \multimap [[o_\sigma \multimap \uparrow_\sigma] \multimap \uparrow_\sigma] \multimap \uparrow_\sigma$
- The idiomatic interpretation can be derived as in (7)

  (7)
$$\dfrac{\dfrac{\lambda y.\lambda Q.\exists e.die(e,y) : s_\sigma \multimap [[o_\sigma \multimap \uparrow_\sigma] \multimap \uparrow_\sigma] \multimap \uparrow_\sigma \qquad Sam : s_\sigma}{\lambda Q.\exists e.die(e,Sam) : [[o_\sigma \multimap \uparrow_\sigma] \multimap \uparrow_\sigma] \multimap \uparrow_\sigma} \qquad \lambda P.the(b,bucket(b),P(b)) : \forall H.[o_\sigma \multimap H] \multimap H}{\exists e.die(e,Sam) : \uparrow_\sigma}$$
- This explains why the examples in (3) lack an idiomatic interpretation – they all involve some kind of discourse referent associated with *the bucket*, which the idiomatic reading does not supply.

Further Issues

- It does not explain why the idiomatic sense of *bucket* resists modification – why, e.g. *kick the unfortunate bucket* or *kick the bucket that awaits us all* cannot be interpreted as meaning 'die'. The idiomatic meaning is derived by simply discarding the interpretation of the object, and there is nothing to stop this being arbitrarily complex. W&S suggest adding the constraint in (8), which simply forbids the object of *kick* to have adjuncts:

  (8) ¬ (↑ OBJ ADJ)

  But this will not do, since certain modifiers of *bucket* are compatible with the idiomatic sense, notable 'emotives' like *bloody* and 'metalinguistic' 'manner of speech' adjectives like *idiomatic* and *proverbial*:

  (9) So that's that [. . .] Another year or two and I'll [kick the bloody bucket].
  (10) Think of all the things that you want to do before you [kick the proverbial bucket].
- However, it is reasonable to assume that emotive and 'manner of speech' adjectives do not have the same semantic type as normal attributive modifiers (which are $\langle et, et \rangle$). Following Potts (2005), emotives might have any type which 'ends in t' – the idea being that the emotional attitude they convey can be associated with, e.g. the whole proposition (type t) or the VP (type $\langle e.t \rangle$). Thus, we can exclude normal modifiers and allow these special types by making specific reference to the semantic type:

  (11) ¬ $(\uparrow \text{OBJ ADJ})_{\sigma\,\langle et,et \rangle}$

Remaining Questions

- It remains to explain why *kick the bucket* and similar idioms appear to resist passive, and why, despite meaning 'die' it does not accept modifiers like *slowly and painfully*:

  (12) a. #The bucket has been kicked (by Sam).
  b. #Sam kicked the bucket slowly and painfully. (cf. 'died slowly and painfully')
- Intuitively, the second issue seems straightforward – both idiomatic and non-idiomatic senses of *kick* should have some indication of 'instantaneousness' as part of their semantics; the challenge is to capture this formally;
- The issue of passive is more problematic. Notice, for example, that non-referential objects, such as expletive *it* in (13), can be passivised:

  (13) a. People consider it polite to remove your shoes when inside.
  b. It is considered polite to remove your shoes when inside.
- W&S assume that actives and passives simply have separate lexical entries, but this is controversial, and potentially problematic.
- It also remains to be seen how far the approach can be extended to syntactically more flexible idioms (e.g. *spill the beans*), where the semantics of the object cannot be simply discarded, and other issues raised in (e.g.) Bargmann and Sailer (2015).

References

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