Idioms in LFG

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SE-LFG19, SOAS, 20 February 2016

1   Introduction

- Structure of the talk:

    - Defining 'idiom'; describing idioms.
    - The problem of representation.

2   What are idioms?

> I shall not today attempt further to define the kinds of material I under-
> stand to be embraced within that shorthand description, and perhaps I
> could never succeed in intelligibly doing so. But I know it when I see it.
>
> US Supreme Court Justice Potter Stewart, 1964

- Hopeless to look for a definition of such a broad and diverse category?

- Nunberg et al. (1994: 492–493) have provided six prototypical properties
  (a sort of family resemblance?):

    1. **Conventionality**: the meaning of an idiom cannot be (entirely)
       predicted from a knowledge of the meaning of its constituent parts
       in isolation.

    2. **Inflexibility**: there are restrictions on the syntactic constructions
       idioms can appear in: #*the bucket was kicked*, #*the bucket that he
       kicked. . .*, etc.

    3. **Figuration**: idioms typically involve metaphor, metonymy, or other
       kinds of imagery.

4. **Proverbiality**: idioms are usually used to describe (and perhaps explain?) commonly occurring situations of particular social interest.

5. **Informality**: idioms are typically associated with informal or colloquial registers.

6. **Affect**: idioms imply an affective stance towards a situation; languages tend not to use idioms to describe situations viewed neutrally.

- Idioms are a type of multi-word expression (MWE), but the two terms are not synonyms.
  - MWEs also include compounds, collocations, periphrasis, etc.

3 Describing idioms

- We can identify certain dimensions of variation within the (broad) class of idioms.

3.1 Opacity

- The more opaque/less transparent an idiom, the less its idiomatic sense can be easily inferred from its literal one.

- Opaque idioms include *kick the bucket*, *chew the fat*, *shoot the breeze*.

- More transparent idioms include *add fuel to the fire*, *hold all the aces*, *stab X in the back*, *miss the boat*, *hit the nail on the head*.

- Of course, this is a matter of degree. . . .

- What is more, some idioms may be 'retrospectively transparent' (Vega-Moreno 2005), e.g. *spill the beans*, *pass the buck*. That is, the real-world knowledge necessary to make the idiom transparent can only be accessed after a meaning has been constructed.

3.2 Decomposability

- Idioms have been traditionally thought of, and often defined as, non-compositional. This is essentially the property of conventionality described above.

- However, some (most?) idioms are motivated by some metaphor (Lakoff & Johnson 1980; Lakoff 1987)—so while conventional, they are not entirely arbitrary.

- Where there is a relevant metaphor/figuration involved, the meanings of an idiom can often be distributed across its parts, thus restoring a semblance of compositionality.
    - Example: for *spill the beans* it is easy to assign an idiomatic meaning to each of the words, so that *spill ≈ divulge* and *beans ≈ secrets*.

- (This is often related to transparency, in that some idiom words can contribute their *literal* meaning to the idiom meaning as a whole, e.g. *miss* in *miss the boat*.)

- Of course, this is not true of all idioms: what is the idiomatic interpretation of *the bucket* in *kick the bucket*, for example?

- Decomposability has a number of consequences. Since the individual parts of the idiom have (figurative) referents, it makes sense to modify them, quantify over them, displace them, etc.:

  (1) a. We leave no digital stone unturned, we poke and prod every nook and cranny of the Interwebz.
       b. Chad Michael Murray spilled the baby beans on Twitter.
  (2) a. They pulled some last minute strings and managed to host us on the main stage before Goldie Looking Chain on the Saturday.
       b. Emotiva has lots of bigger fish to fry at the current time which I fully understand.
  (3) a. The beans haven't been spilled yet on who is to play SRK's leading lady in the film.
       b. Most are not aware of the sinister strings that were pulled to orchestrate this war.

- This is not possible with non-decomposable idioms:

  (4) # They kicked the rusty/tragic bucket.
  (5) # We shot all the breezes last night.
  (6) # The fat that we chewed earlier was really interesting.

- (You will notice that these are the same idioms I gave as examples of opaque idioms above. As far as I see it, all non-decomposable idioms must be opaque, but it is not then true that all decomposable idioms are transparent: the 'retrospectively transparent' idioms like *spill the beans* might plausibly be seen as opaque but decomposable.)

- This is not a simply binary distinction, however; there are degrees of flexibility:

  (7) a. The strings that I pulled got Colin the job.

       b. # The beans that I spilled shocked Colin.

  (8) a. Some influential strings, Claire pulled.

       b. ?# Some explosive beans, John spilled.

4 Representing idioms in the grammar

- The main question for formal linguistics: how do we represent idioms in the grammar/lexicon?

4.1 Words with spaces

- Simplest approach: treat idioms as words. They behave like units, so represent them as the simplest kind of syntactic unit.

- This might well be adequate for certain expressions like *by the by* or *of course*.

- BUT: Unlike morphological words, idioms inflect internally, e.g. *kick(s/ed/ing) the bucket*.

- And, as we saw above, they can be interrupted by modifiers or split up by syntactic operations.

- Perhaps most significantly, they are (for the most part) made up of words which already exist independently. The 'words with spaces' approach treats this as, essentially, a coincidence, which seems wrong.[1]

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[1]Nunberg et al. (1994) make this point when discussing figuration: even when people have no idea *why* a particular metaphor is used, as with *bite the bullet* or *kick the bucket*, they nonetheless perceive that there *is* a metaphor present, and it is not simply that *bullet* or *kick* are accidental homophones of their non-idiomatic counterparts.

- There are of course idioms which contain words that do not occur elsewhere, e.g. *by **dint** of*, *rum **amok***, *take **umbrage** with*, which raises further questions.

- There are formal questions too for an LFG grammar:
  - It seems like a challenge to lexical integrity. This version of the Lexical Integrity Principle from Bresnan (2001: 93) places the emphasis on the unitary and indivisible nature of words:

    (9) Morphologically complete words are leaves of the c-structure tree and each leaf corresponds to one and only one c-structure node.

    If idioms are 'words', then they need to correspond to single leaf nodes at c-structure, and this belies their internal complexity and flexibility.
  - Say we want to allow larger-than-single-node 'words'. How do we represent complex trees as single lexical entries? A Tree-Adjoining Grammar (Joshi et al. 1975) as the c-structure component?

4.2 Lexical ambiguity

- Given the decompositionality facts, why not take them seriously and propose idiomatic meanings for each of the words involved. That is, *pull* is ambiguous between the meaning **pull** and the meaning **exploit**, while *strings* is ambiguous between **strings** and **connections**.

- Of course, we need to restrict the distribution of the meanings, since we want to rule out sentences like these:

  (10) # I overheard some fascinating beans in the cafeteria earlier.

  (11) # Peter was impressed by Claudia's many strings.

  But this is not impossible to do: most lexicalist theories have some means of identifying particular lexemes, e.g. the *lex-id*/LID feature in HPSG (Pollard & Sag 1994)/SBCG (Boas & Sag 2012), or the PRED feature in LFG.[2]

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[2]In fact, this might be one of the few remaining functions of PRED, assuming its roles in the semantics and in subcategorisation have been subsumed by other mechanisms.

(12)   *pull* V $(\uparrow \text{PRED}) = $ 'id-pull'
$((\uparrow_\sigma \text{ARG}_2)_{\sigma^{-1}} \text{PRED FN}) =_c \text{id-string}$

$$\lambda x \lambda y.exploit(x, y) : (\uparrow_\sigma \text{ARG}_1) \multimap (\uparrow_\sigma \text{ARG}_2) \multimap \uparrow_\sigma$$

(13)   *string* N $(\uparrow \text{PRED}) = $ 'id-string'
$((\text{ARG}_2 \uparrow_\sigma)_{\sigma^{-1}} \text{PRED FN}) =_c \text{id-pull}$

$$\lambda x.secret(x) : (\uparrow_\sigma \text{VAR}) \multimap (\uparrow_\sigma \text{RESTR})$$

- Proposals along these lines have been suggested by Gazdar et al. (1985) and Sailer (2000), among others.

- However, mass homophony seems like a poor solution—in all linguistic theorising, not just here. By simply positing ambiguity, we potentially miss generalisations. This might, ultimately, be the only solution, of course.

- But there are reasons to think it is not. Firstly, recall what was said above regarding the fact that idioms are made up of words which exist outside the idiom. Once again, the ambiguity approach treats this fact as accidental.

- What is more, the literal meaning seems to 'hang around' in some sense even within the idiomatic meaning. For example, *kick* continues to impose its aspectual features even in the idiom, so that *kick the bucket* is understood as *die punctually* (see McGinnis (2002) on this phenomenon, and Glasbey (2003, 2007) for some counterexamples and discussion):

  (14)   # Julian had been kicking the bucket for three weeks.

- Additionally, idioms are discourse productive, in the sense that they 'launch' metaphors, which can be continued:

  (15)   Alastair tried to pull some strings for me, but they snapped. . .
  (16)   You really missed the boat on this one, I'm afraid. It's already past the horizon.
  (17)   A: Can I bounce an idea off you?
         B: All right, but don't throw it too hard, I can hardly think straight as it is!

- The continuations rely on the literal meaning, but they retain the idiomatic sense.

- Different to simple ambiguity resolution:

  (18) John went down the bank. He got some money out.

  Here we make a decision one way or the other about which sense is intended. In the idiomatic examples, both senses persist in some sense.

- Finally, idioms can be quite heavily distorted, to the point where they don't even feature (m)any of the 'canonical' words, and still the idiomatic meaning can come off:

  (19) Awww, I thought we'd snag at least one before the feline escaped from the bag.
  (20) When they hit that goal, remind me to buy an extra heavy duty umbrella for all the porcine flyers that day.
  (21) Then the manure really entered the ventilation system.

- What can we do to alleviate some of these problems?

4.3 Quasi-inference

- Pulman (1993) suggests a semantic-based analysis: knowledge of an idiom is possession of a quasi-inference rule taking us from literal to idiomatic meanings.

  (22) $\forall x, y.cat(x) \land bag(y) \land \textit{out-of}(x, y) \approx$
  $$\exists a, z.secret(z) \land revealed(a, z)$$

  This rule, along with other general meaning postulates, gives us the following inference:

  (23) From:
        John let the cat out of the bag
        $let(john, (\exists c, b.cat(c) \land bag(b) \land \textit{out-of}(c, b)))$
        via:
        $\exists c, b.cat(c) \land bag(b) \land \textit{out-of}(c, b)$
        and:
        $\forall x, y.cat(x) \land bag(y) \land \textit{out-of}(x, y) \approx$
        $$\exists a, z.secret(z) \land revealed(a, z)$$
        to:
        $\exists a, z.secret(z) \land revealed(a, z)$

Strengths:

- No lexical ambiguity: these are the 'normal' words.

- Explains the possibility of distortion/circumlocution: the important thing is not the words used, but the meaning expressed.
    - But is it too free? Presumably *kick the pale* implies *kick the bucket*, but this can't be used with the idiomatic meaning.

- By making use of inference, can accommodate the existence of other conjuncts, such as modifiers, etc., although it's not clear how their meanings are to be accommodated into the idiomatic meaning as a whole.

Problems:

- Has nothing to say about syntactic flexibility, so we have to rely on some other mechanism to rule out e.g. #*The bucket has been kicked.* Pulman (1993: 268) suggests that this is due to the fact that *the bucket* does not refer to any discourse entity, and so it is incompatible with the focussing effect of being a passive subject. But this cannot be the whole story: as Arnold (2015) points out, sentences with a non-thematic subject like (24) are perfectly acceptable.

    (24)   It is considered polite to remove your shoes when inside.

- What do we do about idioms with no literal interpretation, e.g. *take umbrage, by dint of*?

- This approach also runs contrary to the psycholinguistic work on idioms (and metaphor more generally), where it has been found that idiomatic meanings are accessed *faster* than literal meanings (Swinney & Cutler 1979; Gibbs 1986; Cronk 1992, 1993). So it does not seem like idiom processing is a kind of post-semantic inference. (Of course, whether psycholinguistics is in anywhere near advanced enough a state to be arbitrating over theoretical debates is another debate altogether. . .)

4.4   Manager resources

- Similar in spirit to the Pulman approach, but applying that bit earlier.

- Annotations on phrase structure rules (cf. Asudeh et al.'s (2013) approach to constructions).

- Idiom templates include the following:
  - Constraining equations to identify the correct conditions (including determiners etc.).
  - Manager-style resources (Asudeh 2012) to remove the 'literal' meaning.
  - Idiom meanings supplied: can be separate or not to model decomposable idioms.

- (Along the same lines as the proposal of Arnold (2015), but by annotating the phrasal nodes we avoid the need for mass homophony.)

- Examples:

(25)   SPILL-THE-BEANS :=
$$(\uparrow \text{ PRED FN}) =_c \text{ spill}$$
$$((\uparrow_\sigma \text{ ARG}_2)_{\sigma^{-1}} \text{ PRED FN}) =_c \text{ bean}$$

$$\lambda P \lambda x \lambda y \lambda e.divulge(e,x,y):$$
$$[(\uparrow_\sigma \text{ ARG}_1) \multimap (\uparrow_\sigma \text{ ARG}_2) \multimap (\uparrow_\sigma \text{ EVENT}) \multimap \uparrow_\sigma]$$
$$(\uparrow_\sigma \text{ ARG}_1) \multimap (\uparrow_\sigma \text{ ARG}_2) \multimap (\uparrow_\sigma \text{ EVENT}) \multimap \uparrow_\sigma$$

$$\lambda Q \lambda v.secret(v): [(\uparrow_\sigma \text{ ARG}_2 \text{ VAR}) \multimap (\uparrow_\sigma \text{ ARG}_2 \text{ RESTR})] \multimap$$
$$(\uparrow_\sigma \text{ ARG}_2 \text{ VAR}) \multimap (\uparrow_\sigma \text{ ARG}_2 \text{ RESTR})$$

(26)   KICK-THE-BUCKET :=
$$(\uparrow \text{ PRED FN}) =_c \text{ kick}$$
$$(\uparrow \text{ OBJ PRED FN}) =_c \text{ bucket}$$
$$(\uparrow \text{ OBJ SPEC PRED FN}) =_c \text{ the}$$

$$\lambda P \lambda x \lambda e.die(e,x): [(\uparrow_\sigma \text{ ARG}_1) \multimap (\uparrow_\sigma \text{ EVENT}) \multimap \uparrow_\sigma] \multimap$$
$$(\uparrow_\sigma \text{ ARG}_1) \multimap (\uparrow_\sigma \text{ EVENT}) \multimap \uparrow_\sigma$$

Strengths:

- No lexical ambiguity.

- Syntactic flexibility can be directly encoded; making use of the mapping between f-structure and s-structure we can define looser or tighter ties to syntactic structure.

- Allows an explanation of idioms with no literal interpretation: presumably *umbrage* includes no meaning constructor, but the TAKE-UMBRAGE

template will provide an appropriate one (for *umbrage* or for the whole expression).

- Potentially pleasing model of how e.g. aspectual features can persist in the idiom: the manager only removes the core meaning, and any additional meaning constructors, such as (27) would persist into the derivation.

  (27) $\lambda P \lambda e. P(e) \wedge$ *punctual*(e) :
  $$[(\uparrow_\sigma \text{ EVENT}) \multimap \uparrow_\sigma] \multimap (\uparrow_\sigma \text{ EVENT}) \multimap \uparrow_\sigma$$

Problems:

- Still throws away the literal meaning in favour of the idiomatic one, so the discourse productivity remains unexplained.

- Modifiers: Owing to how Glue Semantics works, (25) predicts an ambiguity about whether modifiers apply or not; if they combine before the manager for *beans* then their meanings will be discarded. Similarly, (26) predicts that modifiers should be acceptable with *bucket*, but simply won't mean anything.
    - For the latter case, we could include an appropriate constraint in the template, e.g.

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

      where the type restriction is to permit 'emotive' or 'metalinguistic' modifiers of the type *kick the bloody/proverbial bucket* (Arnold 2015). But this is purely stipulative.

- In fact, restrictions on syntactic flexibility in general are largely stipulative.

4.5   Multi-dimensionality

- Since the literal meaning seems to 'be present' in some sense, why not keep it around?

- The sort of multidimensionality explored by Potts (2005) allows for this, although of course the multidimensionality I am considering is of a different kind than the at-issue/side-issue distinction Potts was looking at.

- Developed in LFG by Arnold & Sadler (2010) and Giorgolo & Asudeh (2011).

- Might the *Writer* monad explored by Giorgolo & Asudeh (2011) be of use? It remains to be explained how the discourse productive processes reach into the pair constructed by the monad.

- We are also back to the realm of lexical ambiguity, although of a slightly different nature: idiom words might only need a single meaning, but it must be complex.

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