Idioms and the syntax/semantics interface of descriptive content vs. reference

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Idioms and compositionality

- Compositional disconnect between descriptive content and reference, e.g. V-N idioms:

(1) pull strings

a. pull some strings
b. pull political strings
c. pull all the strings I can

→ Problem of intervening determiners and modifiers

(see, e.g., Nunberg et al. 1994)

Goals of the talk

1. to defend the view that distinguishing composition of descriptive content from composition involving reference-related expressions can offer new insight into such data
2. to underscore the importance of this distinction by drawing attention to other – disperse – examples in the syntax and semantics literature where this distinction is implicitly made

[WORK IN PROGRESS]

Structure of the talk

- Delimiting the data
- Previous syntactic proposals
- Analysis: Separating descriptive content from reference
- Pointer to how this approach might generalize beyond idioms

→ Connection to semantic and syntactic accounts that try to achieve a similar separation between composition of descriptive content and reference without making the distinction explicit

Delimiting the data

Restricting our focus to

- Decomposable idioms (2-a)
  ('idiomatically combining expressions' in Nunberg et al. 1994)
  (vs. non-decomposable ones, (2-b), though we recognize that this distinction is tricky)

  (2) a. pull strings
  b. shoot the breeze

- V-(P)-N idioms for now
- Intervening modifiers and determiners

Determiner variability in idioms

e.g. Bruening et al. (2015)

(3) **Idioms with canonical definite determiners**

a. rock the boat: “This’ll rock some boats”
b. foot the bill: “Who should foot that bill?”; “taxpayers must foot another bill”

(4) **Idioms with canonical indefinite determiners**

a. beat a dead horse: “it’s moronic for a public figure to beat that dead horse of a joke”
b. smell a rat: “Do we all smell many rats connected with this legislation?”

(5) **Idioms with canonical bare nominals**

a. pass muster: “creativity has to pass some muster as practical”
b. turn tail: “the defenders would just turn their tail and run the other way”; “That’s a very good moment to turn the tail and run like crazy”
c. build castles in the air: “Mother Meade had built many castles in the air.”
d. cut corners: “This is What Happens When Companies Cut Too Many Corners and Don’t Give a Damn”

Modification

e.g. Ernst (1981)

(6) **External modification**: applies to the idiom as a whole (allow adverbial paraphrase)

a. He made a speech in Dublin which touched a raw political nerve.
b. Don't rock the sociological boat with your new ideas.

(7) **Internal modification**: applies to the idiomatic nominal

a. In spite of its conservatism, many people were eager to jump on the horse-drawn Reagan bandwagon.
b. The federal agency decided to take the project under its well-muscled wing.

(8) **Conjunction modification**: applies to the literal nominal

a. In spite of the treatment the other refugees received from the rescue party in the desert, he bit his thirst-swollen tongue and kept to himself.
b. The $6,000,000 man came over and lent us a helping electronic hand.

(see also Stathi 2007, Cserép 2010, McClure 2011, Sailer 2017, a.o.)

Modification II

- **Conjunction modification cannot be pushed aside as word play.**

  (What does that even mean?)

- **Internal modification cannot be reduced to external modification.**

  (contra, e.g., Nicolas 1995)

  e.g. Ernst's data with two internally modified nouns:

(9)
  a. In an extremely quixotic effort, he was casting Marxist pearls before capitalist swine.
  b. In doing the project we were caught between the theoretical devil and the practical deep blue sea.
  c. I've got a lot of philosophical irons in the linguistic fire right now.
  d. Too many political cooks spoil the economic broth.

$\rightarrow$ At most one could be interpreted as an external modifier.

Previous (mostly) syntactic accounts

Two levels of interpretation

Ernst (1981): Simultaneous representation of idiomatic and non-idiomatic meaning, with links between these.

(10) a. JOIN CAUSE/MOVEMENT
JUMP ON [THE HORSE-DRAWN REAGAN BANDWAGON]
Jump on the horse-drawn Reagan bandwagon (surface string)

b. CHECK SPEAKING-CAPACITY
BITE HIS THIRST-SWOLLEN TONGUE
∧ HE HAS A THIRST-SWOLLEN TONGUE.
He bit his thirst-swollen tongue.

c. ECONOMIZE
TIGHTEN THEIR GUCCI BELTS ∧ THEY HAVE GUCCI BELTS.
With the recession, oil companies are having to tighten their Gucci belts.

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Problem: Not explicit enough about syntax/semantics.

Discontinuous D and NP

Sportiche (2005): Arguments from reconstruction and idiom chunks for split DP.

(11) Much care$_t$ seems to have been taken *t* of the victims.

- NP is generated low.
- D is generated in a higher position to which NP moves:

(12) ... [D NP$_t$] ... [[$_{NP}$ *t*] V ...] ...

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Problems:

1. Compositionality.
2. Not clear where to merge D.

D as non-selected

Bruening et al. (2015), Bruening (2015): Reject DP-Hypothesis.

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Problem: Loses advantages of DP hypothesis.

"Banyan" trees

Svenonius (2005): N appears in a multi-dominance structure in which it is related to both V and D, but the latter are not related to each other.

(14) [$_{VP}$ pull [$_{PossP}$ leg $_{VP}$] X's $_{PossP}$]

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(14) [$_{VP}$ pull [$_{PossP}$ leg $_{VP}$] X's $_{PossP}$]

Problem: Lacks an explicit semantics.

HPSG

Sailer (2004), Bargmann and Sailer (2015): Rich HPSG representations permit finer distinctions:

- **Local semantic features:** Encode basic lexical information, manage sortal and pragmatic selectional restrictions.
- **Compositional semantic features:** Regulate the combination of larger constituents, including quantifier scope.

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Problem: No explicit technique for combining the local contents in a way that would produce idiomatic meanings.

Interim summary

These previous syntactic accounts posit two steps in the derivation, or two different representations:

- One deals with selection (e.g. of Ns by Vs), with particular (sortal and/or other) restrictions imposed on the selected constituent.
- The other is for the syntax of determiners/classifiers.

$\Rightarrow$ Two levels of representation, with nouns and verbs playing a double role at both levels.

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$\Rightarrow$ Two levels of representation, with nouns and verbs playing a double role at both levels.

Our goal: Spell out a semantic account that separates conceptual and referential semantics, incorporating insights from ...

- this syntactic literature on idioms, and
- the semantic literature on kinds and on noun incorporation.

Our analysis

General strategy

Step 1: Draw on work on noun incorporation.

- **Carlson (2003):** Incorporation involves constructing complex event *types* (vs. event *tokens*).
- **Farkas and de Swart (2003):** Distinguish composition mediated by thematic arguments (glue between predicates and role-bearing expressions) from that involving referential arguments.
- **Gehrke and McNally (2014):** Basis for handling modification.

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Step 2: Recast complex event-type descriptions in a non-referential (here, distributional) semantics, following McNally (2017), McNally and Boleda (2017).

[WORK IN PROGRESS]

Carlson (2003)

[T]he VP is the domain of a context-free interpretive mechanism specifying an event-type, which is then the input to the usual context-sensitive propositional semantics generally assumed for all levels of the sentence. That is, something fundamentally different goes on within the VP that does not go on "above" the VP – it is only information about types/properties that appears there and not information about (contingent) particulars.

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Problem: How to combine the descriptive content of DP with that of V, ignoring D, and preserve compositionality? Can one form an event-type description with a referential expression in it? If so, how?

Farkas and de Swart (2003): The problem

Incorporation of bare singulars vs. bare plurals in Hungarian (p. 135, slightly adapted):

(17) János **beteget**$_i$ vizsgált .... ??őt$_i$...
Janos patient.ACC examine.PAST .... him
'Janos patient$_i$-examined .... ??him$_i$...'

(18) János **betegeket**$_i$ vizsgált .... őket$_i$...
Janos patient.PL.ACC examine.PAST .... them
'Janos patients$_i$-examined in the office .... them$_i$...'

(19) János **egy beteget**$_i$ vizsgált .... őt$_i$...
Janos a patient.ACC examine.PAST the .... him
'Janos examined a patient$_i$ .... him$_i$...'

Farkas and de Swart (2003): The account

- Implemented in DRT.
- Variables for discourse referents, which instantiate the arguments of a predicate, are distinguished from variables for so-called *thematic arguments* (see Koenig and Mauner 1999).
- Two different kinds of semantic composition rules:
  - A(rgument)-Instantiation by the discourse referent *contributed by a nominal argument*.
  - Unification of thematic arguments (for incorporation).

Farkas and de Swart (2003)

Two types of A-Instantiation:

- D(eterminer)-Instantiation: Instantiate the thematic argument z of the NP by the discourse referent u contributed by material under D, and subscript u with the index x, writing u_x. (p. 35)
- Secondary Instantiation: Instantiate the thematic argument x of a nominal with a discourse referent a_x that it is co-indexed with. (p. 49) $\rightarrow$ Used only with bare plurals.

Secondary Instantiation

Secondary Instantiation, unlike D-Instantiation, is driven by the presuppositional semantics of the plural rather than by the lexical input of the syntactic configuration. Unlike D-Instantiation, Secondary Instantiation is not triggered by a reduction rule, and ***therefore its application is not tied to a particular point in the derivation****. It is a last resort strategy that allows a discourse referent contributed by the plural feature to connect to the thematic argument of the nominal in the absence of a proper binder.*

(Farkas and de Swart 2003, 48f.; emphasis ours)

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- Dissociates the point at which discourse referents are instantiated from the point at which thematic arguments are unified.
- No strong reason not to do this with DPs in general.

Extension to idioms: Basic case

(20) a. *pull*: $\langle\{\}, \{\textbf{pull}(x, y)\}, \{\}\rangle$
b. *strings*: $\langle\{\}, \{\textbf{strings}(z)\}, \{u_z\}\rangle$

(21) *pull strings*:

a. Unification: $\langle\{\}, \{\textbf{pull}(x, z), \textbf{strings}(z), \}, \{u_z\}\rangle$
b. Sec. Inst.: $\langle\{u_z\}, \{\textbf{pull}(x, u_z), \textbf{strings}(u_z)\}, \{u_z\}\rangle$

Adding *some*

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Unification for modification:

- Replace the relevant thematic argument *x* of a modifier with the thematic argument *y* contributed by the predicate it modifies.
- Eliminate any speaker-presupposed discourse referent associated with the modifier.

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b. *some strings*: $\langle\{\}, \{\textbf{strings}(z), \textbf{some}(z)\}, \{u_z\}\rangle$
c. *pull some strings*:
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Still pending: 1) non-transparency of idiomatic descriptive content
2) determiner variability

Back to external modification

(setting aside internal and conjunction modification for future research)

- Generalization on Ernst's data: External modifiers are either
  - Relational adjectives (RAs) (24), or
  - Noun modifiers (25)

(24)
a. Carter doesn't have an economic leg to stand on.
b. We need to blow off a little theoretical steam here.
c. To the old men in the Kremlin, beset with problems, the world is far from a Soviet oyster.

(25)
a. He denied that the Saudis, angry over *Death of a Princess*, were seeking some celluloid revenge with a movie of their own.
b. Our team is not as good as last year's, but we aren't going to drop out of the soccer picture.
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- Both types of modifiers involve a contextually specified relation *R* between modifier and modifiee.

The semantics of relational adjectives (RAs)

Building on McNally and Boleda (2004), Arsenijević et al. (2014)

(26) $[\![\text{political}]\!]$: $\lambda P_k \lambda x_k [P_k(x_k) \wedge R(x_k, \textbf{politics})]$

- The RA *political* expresses a contextually specified relation R between the modified nominal and politics.
- RAs are not sortally restricted but can apply equally to events or individuals.
  - Application to events often gives rise to the so-called 'thematic' use.
  - Otherwise yields the 'classificatory' use.

  (Though we assume a unified account of both uses.)

Adverbial paraphrases of adjectives

Inspiration from frequency adjectives (FAs) (Gehrke and McNally 2014).

- Temporal FAs, e.g. *frequent, daily*, can usually only be paraphrased adverbially when they modify an event nominal (27).

(27) a. They underwent a frequent check-up.
$\sim$ Frequently, they underwent a check-up.

b. A/The frequent sailor strolled by.
$\not\sim$ Frequently, a sailor strolled by.
(vs. non-temporal *occasional, odd*: *A/The occasional sailor strolled by.*)

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(vs. non-temporal *occasional, odd*: *A/The occasional sailor strolled by.*)

- However, under particular conditions (on which see op.cit.), this is also possible with non-event nominals (28).

(28) a. She wrote me frequent letters.
$\sim$ Frequently, she wrote me a letter.
b. She baked frequent cakes.
$\sim$ Frequently, she baked a cake.

Gehrke and McNally's (2014) account

- Temporal FAs are always event modifiers, (29-a).
- Nominals contain an additional contextually determined relation R_θ to an event, (29-b) (usually resolved by thematic relation).

(29)
a. $[\![\text{frequent}]\!]$: $\lambda e[\textbf{frequent}(e)]$
b. $[\![\text{cakes}]\!]$: $\lambda z \lambda e[\textbf{cake*}(z) \wedge R_\theta(z, e)]$
c. $[\![\text{frequent cakes}]\!]$: $\lambda z \lambda e[\textbf{cake*}(z) \wedge \textbf{frequent}(e) \wedge R_\theta(z, e)]$

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- Under particular conditions, the modifiee is interpreted on a par with incorporated nominals so that the event is contextually specified as being the one described by N-V, (30).

(30)
a. [[bake]]: $\lambda y \lambda e.\textbf{bake}(y, e)$
b. [[frequent cakes]]: $\lambda z \lambda e[\textbf{cake*}(z) \wedge \textbf{frequent}(e) \wedge R_\theta(z, e)]$
c. [[bake frequent cakes]]:
$\lambda y \lambda e[\textbf{bake}(y, e) \wedge \textbf{cake*}(y) \wedge \textbf{frequent}(e) \wedge R_\theta(y, e)]$

Towards an account of external modification

Combining the insights from FAs and RAs (ignoring kind subscripts):

(31)
a. *pull*: $\langle\{\}, \{\textbf{pull}(x, y, e)\}, \{\}\rangle$
b. *political*: $\langle\{\}, \{R(w, \textbf{politics}\}, \{\}\rangle$
c. *strings*: $\langle\{\}, \{\textbf{strings}(z), R_\theta(z, e)\}, \{u_z\}\rangle$
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Some can be added as before, after step (d).

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Now: What about the non-transparent idiomatic meaning?

Towards an account of idiomatic meaning: Distributional Semantics

Distributed (non-symbolic) representations currently dominate computational semantics.

- Main origin in linguistics: Harris 1954, Firth 1957 (the 'Distributional Hypothesis"); also long history in information retrieval and psychology.
- Words and phrases represented as (possibly higher order) **vectors** reflecting their distributions in use.
  - Extracted from corpora (and then typically compressed) or machine learned (see Baroni et al. 2014 for comparison).
  - Any features associated with them are *latently distributed* across the vector dimensions.

See Lenci (2018) for an introduction and technical details.

Properties of distributional representations

- No distinction between "linguistic" meaning and conceptual content.
- Lexical representations are overspecified (rather than underspecified) and not disambiguated:
  $\rightarrow$ Disambiguation via (co-)composition (Pustejovsky 1995).
- Representations for complex phrases can be either generated directly (in the same way as those for words) or composed (e.g. by vector addition).
- Not grounded; not (currently) well suited to modeling the semantics of function words or token reference.
  $\rightarrow$ Can be thought of as *classifiers* (for entities, events)

Distributional semantics for idioms

- Similar contexts = similar representations: Good models of analogical phenomena $\rightarrow$ idioms.
- Conceptual content can be exploited in meaning extensions.
- Changes in use over time $\rightarrow$ changes in representation $\rightarrow$ loss of transparency.
- Representations can be associated with chunks directly: another route to non-/semi- transparency.

Connecting distributional semantics to DRT

- Model content words using vectors.
- Think of vectors as type descriptions.
- Compose complex type descriptions using distributional methods (eventually substituting Unification of Thematic Arguments).
- Use Secondary Instantiation more liberally to connect descriptive content to referents.

Back to determiner variability

Recall data from Bruening et al. (2015):

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(33) **Idioms with canonical indefinite determiners**

a. beat a dead horse: “it’s moronic for a public figure to beat that dead horse of a joke”
b. smell a rat: “Do we all smell many rats connected with this legislation?”

(34) **Idioms with canonical bare nominals**

a. pass muster: “creativity has to pass some muster as practical”
b. turn tail: “the defenders would just turn their tail and run the other way”; “That’s a very good moment to turn the tail and run like crazy”
c. build castles in the air: “Mother Meade had built many castles in the air.”
d. cut corners: “This is What Happens When Companies Cut Too Many Corners and Don’t Give a Damn”

Determiner variability: preliminary generalizations

- Variability determined by the extent to which the event type described on the idiomatic reading is related to the interpretation on the non-idiomatic reading.
- Not everything goes:
  - Variability only within the range of weak (in)definites and measure expressions.
  - True strong quantifiers do not appear (instances of *every* analyzable as MAX).

→ An incorporation-style / event type/kind analysis is still maintainable.

(see, e.g., Carlson 2003, Carlson et al. 2014, Schwarz 2014, on incorporation accounts of weak (in)definites)

Making sense of determiner variability

To what extent is the event type described on the idiomatic reading related to the interpretation on the non-idiomatic reading?

A Nondecomposable idioms: analogy unrelated to event structure

(35) a. to shoot the breeze ∼ to converse idly
b. to chew the fat ∼ to make friendly familiar conversation

- Both idioms are pointless activities under the literal interpretation.

→ Pointlessness is the analogical basis for the idiom; this pointlessness has nothing to do with the event type.

- The definite determiner signals contextual uniqueness (like *the sun*).

→ No determiner variation.

B More or less decomposable idioms: analogy related to event structure; different groups ...

Making sense of determiner variability II

Decomposable idioms: Generally, the determiner can vary depending on the relation between the participant described by the direct object and the event structure of the whole VP.

- Definite objects: Insofar as the definite reflects uniqueness of the object participant in the event, changing to an indefinite either induces iterativity/plurality or genericity on the event.
- Indefinite objects: Generally changes the measure/plurality properties of the event; change to a definite is usually infelicitous (unless they are required by an adjective like *same* or *usual*).

Making sense of determiner variability III

Definite object examples:

(36) a. kick the bucket
b. bend X's ear

- Idioms based on the result of the described event involving contextually unique direct object participants.

→ Basis for linking the counting of events to those participants.

- The definite article reflects this uniqueness.
- Variation in the determiner is possible if it makes sense contextually for there to be more than one event.

(37) Far more people pass on, push up daisies, kick buckets, visit Davy Jones locker, or journey to the great beyond, than simply die. (Everaert 2017)

(38) bend a few receptive ears... [GloWbE]

Making sense of determiner variability IV

Indefinite/bare object examples:

(39) a. to smell a rat
b. to blow off steam
c. to cut corners

- Like *kick the bucket*, idiomatic use based on result of an event.
- But in these cases, no uniqueness implication → no definite article.
- The measure of the object referent serves to measure the number of events (*smell many rats*) or the size of the result (*blow off a lot of steam*).

The limits of idiomaticity

(40) a. to touch a nerve ‘idiom’
b. to touch a subject ‘figurative’ use

- Both should require the same sort of co-compositional operation.
- Idiomaticity with, e.g., *nerves* comes from applying *nerve* to something that is not, strictly speaking, a nerve.
- But the grammatical properties of the VP are preserved, in the way that such aspects of meaning are preserved in ‘figurative’ uses of verbs (see, e.g., McNally and Spalek 2017).

Generalizing the account: Beyond idioms

N and V movement

Diesing's (1992) Mapping Hypothesis: (directly referred to in Carlson 2003)

- Clauses have two levels: VP and IP/CP.
  - Referential/quantificational NPs have to vacate the VP to be interpreted (in the restrictor of an overt or covert quantifier).
  - Property-type NPs stay in VP.

e.g. Scrambling in German

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  e.g. Scrambling in German
- Diesing and Jelinek (1995): Finite verbs move out of their base position, dragging along some but not other nominals (tied to referential vs. non-referential status, cliticized vs. non-cliticized).
  - Object shift in Scandinavian (Mainland Scandinavian vs. Icelandic)
  - Particle shift in English

  More generally: Differences can be tied to how far V moves.
  - to I/T in Scandinavian
  - to Asp/v in English

(see also Holmberg 1986, Pollock 1989, Vikner 2006, Bentzen et al. 2007, Biberauer and Roberts 2010, Koeneman and Zeijlstra 2014)

N and V movement II

How this relates to our analysis:

- Though not addressed directly, Diesing (and Jelinek)'s account entails that V and NP combine at a lower level first (VP), without taking into account the referential properties of determiners or finiteness.
- Both V and N move out for independent reasons that one could tie to referentiality.
- The VP is the domain of event and individual kinds, instantiation / realization takes place at higher levels.

(see also Gehrke 2011, 2015, 2017, Grimm and McNally 2015)

→ **A mechanism of separating concept composition from referentiality is generally necessary, not just for idioms.**

Conclusion

Summary

- Modification and determiner variability in idioms pose a general problem for both syntax and semantics.
- There are syntactic accounts that converge on the idea that V and N combine first and that the contribution of D and modifiers is computed independently or at a later stage.
- We spelled out a semantic account that explicitly separates concept composition from referentiality, which should be generalizable to instances of V-N composition beyond idioms.

Take-home message

- Conceptual content adjustment in composition is generally needed, e.g. (41) (see also Spalek 2014, McNally and Spalek 2017).

(41) a. break the glass
b. break relations
c. break the ice

- Idioms are just at one extreme end of the continuum between literal and non-literal meaning.
- A generalized approach that distinguishes concept composition from reference is suited to deal with all kinds of adjustments.

Idioms and the syntax/semantics interface of descriptive content vs. reference

Danke! – Gràcies!

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