The Third MACSIM

Johns Hopkins University, Apr 13, 2013

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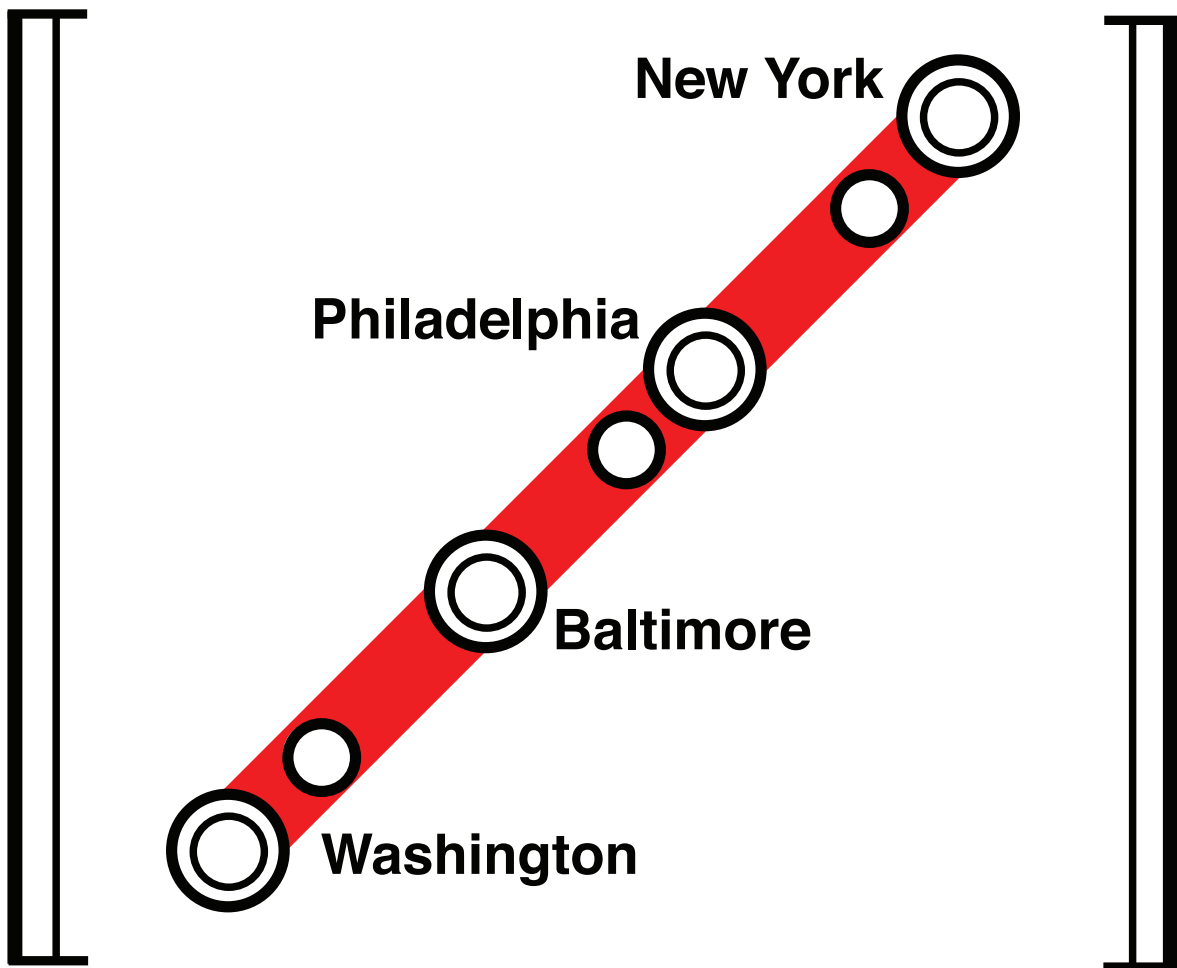
MACSIM

Program

9–10	Breakfast, registration, poster set-up (Gilman Atrium)
10–11	Talk session 1 (Gilman 050)
	Mike Oliver (JHU): Interpretation as Optimization: (So-called) Privative Adjective Constructions
	Christopher Ahern (UPenn): Honest Signaling and the Maxim of Quality
11-12:15	Poster session 1 (see p. 3) / coffee (Gilman Atrium)
12:15–1:15	Invited talk (Gilman 050)
	Paul Portner (Georgetown University): Imperatives and Gradable Modality
1:15–2:15	Lunch (Gilman Atrium)
2:15–3:15	Talk session 2 (Gilman 050)
	Tim Leffel (NYU): A Syntactically Conservative Approach to Bolinger Effects
	Teresa O'Neill (CUNY): Equating Sentences: a Type-shifting Operation on Propositions
3:15–4:30	Poster session 2 (see p. 3) / coffee (Gilman Atrium)
4:30–6	Talk session 3 (Gilman 050)
	Mingming Liu (Rutgers): Participant Sharing in Chinese Resultatives
	Yanyan Cui (Georgetown): Modal Concord – from a Corpus Perspective
	Chris LaTerza (UMD): Plural *de se* Reports
6–6:10	Business meeting
6:30–	Dinner (Gilman Atrium)

Acknowledgements

Poster session 1 (11–12:15)

- *Diti Bhadra (Rutgers)*: Bangla biased questions with 'naki' (1)
- *Haitao Cai (UPenn)*: A Few Arguments against Counterfactual Accounts of Causation (2)
- *Ting Chi (Georgetown)*: Automatic Disambiguation of Chinese Modal Auxiliaries (3)
- *Rachel Dudley, Naha Orita, Morgan Moyer, Valentine Hacquard, and Jeffrey Lidz (UMD)*: Are three year olds really insensitive to factivity? (4)
- *Chris Callison-Burch, Benjamin Van Durme, Matt Post, Juri Ganetkevich, Jonathan Weese, and Ellie Pavlick (JHU)*: Large-scale paraphrasing for natural language understanding (5)
- *Kristen Johannes (JHU)*: Acquiring a balance: Verbs in the development of spatial language (6)
- *Lan Kim (University of Delaware)*: The multidimensional approach to the affected experiencer construction in Korean (7)
- *Dunja Veselinovic (NYU)*: Distributivity with group nouns: semantics or pragmatics? (8)
- *Alexis Wellwood (UMD)*: How much plurals count (9)
- *Emily Wilson (CUNY)*: Interpretive effects of predicate inversion: The syntax and information structure of nominal copula constructions in Slovenian (10)

Poster session 2 (3:15–4:30)

- *Charley Beller (JHU)*: Neutral and pejorative nouns (1)
- *Han-Byul Chung (CUNY)*: The semantics of the Korean particles *i/ka* and *ul/lul* (2)
- *Michael Gagnon (UMD)*: Noun Phrase Ellipsis Revisited (3)
- *Hillary Harner (Georgetown)*: Focus Sensitivity and Deontic Strength (4)
- *Anton Ingason (UPenn)*: The Causation of Experience Construction in Icelandic – Implications for Syntax and Semantics (5)
- *Jooyoung Kim (University of Delaware)*: Two Types of Unselected Embedded Questions in Japanese and Korean (6)
- *Bokyung Mun (Georgetown)*: A necessity priority modal and its interaction with tense in Korean (7)
- *Teresa Torres Bustamante (Rutgers)*: Mirativity within the typology of surprise-expressions (8)
- *Aaron White (UMD)*: An experimental investigation of partial control (9)
- *Erin Zaroukian (JHU)*: 'Approximately' vs. 'about': epistemic possibility in approximation (10)
- *Linmin Zhang (NYU)*: A rate analysis of binomial each (11)

Honest Signaling and the Maxim of Quality

Christopher Ahern
University of Pennsylvania

The modern study of meaning presupposes that agents are, by and large, truthful. In the semantic tradition, the focus has been on determining the truth conditions of sentences, that is, specifying what the world must be like in order for a sentence to be true. In Gricean pragmatics this is seen in the assumption that agents act according to a *Cooperative Principle* and obey the *Maxim of Quality*: Try to make your contribution one that is true, (1) Do not say what you believe to be false, (2) Do not say that for which you lack adequate evidence. In fact, (Grice, 1975, 27) took this to be the most fundamental of his maxims, of a substantially different character than any of the others.

However, in the face of incentives to lie, these assumptions beg the question. If I lie, then you have no reason to listen to me. If you cease to listen to me, I have no reason to speak in the first place. The tempting pull of deception unravels the ability of signals to carry meaning. The fact that words can be used to convey meaning suggests that there are, at the very least, disincentives to being dishonest. How this came to be so rests on the evolution of cooperation broadly (Nowak, 2006; Bowles and Gintis, 2011), and the evolution of honest signaling in particular. Here we consider three general classes of mechanisms for ensuring the stability of honest signaling that have been proposed in the animal signaling literature (Maynard Smith and Harper, 2004; Searcy and Nowicki, 2005). We explore the cognitive capacities and social structures that support the stability of honest signaling, and relate these findings to how we use language.

In particular, we examine how the ability of agents to remember interactions and condition behavior on reputations (Trivers, 1971) might enforce the first submaxim in a population. We define the impact of a memory under certain conditions and determine the role of population size in its effectiveness in curbing dishonesty. We then consider how the spread of reputations via gossip can act as a countervailing force to a dramatic increase in the size of a population. Finally, we look at the problem of honesty in gossip. Through simulations, we find that when agents are held accountable for the gossip they spread, they do best by observing the second submaxim and only making claims with sufficient evidence.

This work shows how the cognitive and social structures of memory, reputation, and gossip act as deterrents to dishonest signaling. More broadly, it connects work on social evolution to the way we use language. We find that it is not the case that we use language in a Gricean manner because our interests are perfectly aligned. Rather, our socio-cognitive circumstances constrain our behavior despite divergent preferences.

1

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2

Bangla Biased Questions with 'Naki'
Diti Bhadra (Rutgers University)

The discourse particle 'naki' that occurs felicitously only in polar questions and declaratives in Bangla – has a threefold semantics in the language:
• It can encode Inferential Evidentiality in questions:
   (1) *Context: You told your friend to leave the house key with the neighbor, NOT the caretaker. However, while returning home, you see your friend call up the caretaker. You ask:*
      Cabi-ta protibeshi-r kache rekhe ashish.ni naki?
      key.CL neighbor.GEN close keep come.2P.NEG NAKI
      'Haven't you left the key with the neighbor (I infer)?'
• However, this Inferential evidentiality with 'naki' is infelicitous in declaratives:
   (2) *Context: Ram has been complaining about his old shoes for a week.Ram's father says to his mother:*
    #Ram notun juto kinte   chay   naki
    Ram new   shoe buy.INF want.3P NAKI
    'Ram wants to buy new shoes (I infer)'
• On the other hand, Reportative Evidentiality encoded by naki is felicitous in both questions and declaratives, respectively given below:
   (3) *Context: The neighbor heard something from her own son and is confirming it with Ram's mother:*
    Ram naki   notun juto kinte   chay?
    Ram NAKI new   shoe buy.INF   want.3P
    'Does Ram want to buy new shoes (reportedly)?'
   (4) Context: *Ram's mother tells her neighbor, and the neighbor then tells me:*
    Ram naki notun juto kinte   chay.
    Ram NAKI new   shoe buy.INF want.3P
    'Ram wants to buy new shoes (reportedly)'
• Naki questions, as can be inferred from the data above, are always confirmation questions, and are infelicitous in wh questions. For example:
 (5) *Tui kar sathe bari jacchish naki?
    You who with home go.2P NAKI
    'Who are you going home with, (reportedly)?'
• The two different positions of naki in the clause in (1) and (4) correspond to the two distinct evidential interpretations – the Inferential Naki always occurs clause-finally, while the Reportative Naki always occurs clause-internally. Switching the syntactic positions of the element makes unavailable the interpretations originally associated with that positions.
• In both the questions in (1) and (3), there is a speaker presupposition that he believes one answer to be more likely than the other – and the important observation here is that the polarity of the bias is equal to the polarity of the IP in the question.
Therefore, in (1) the bias of the speaker in asking the naki question is Negative (the proposition is negative too), while in (3), the speaker bias is positive (equal to the polarity of the proposition).
• The bias of the speaker does not affect the truth conditions of the answer to the naki question, it only adds a restriction to the denotation of the question – i.e. the question carries with it the presupposition about the speaker's grounds in making the utterance, which leads him to have certain expectations when confirming a proposition An account of 'naki' that unifies distinct categories such as evidentiality and bias is needed to account for all these generalizations.

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A Few Arguments against Counterfactual Accounts of Causation

Haitao Cai

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The notion of causation is intimately related to that of counterfactuals. For example, an event e might not have occurred if its cause e' hadn't. Two mutually exclusive approaches have been widely discussed. Lewis [5] analyzes causation in terms of counterfactuals. On the contrary, semantics of counterfactuals are developed on the basis of the mechanism of causal entailment (Schulz, [10]).

Following Lewis [5], counterfactual theories of causation normally decompose the causation between two actual events c and e into a chain of actual particular events $c, d_1, \ldots, d_n, e$ where each event depends causally on its immediate predecessor. For actuality of the events, causal dependence between d_i and d_{i+1} boils down to counterfactual dependence between occurrences of the two events, i.e. if d_i hadn't occurred, d_{i+1} wouldn't have occurred, either (notation: $\neg O(d_i) \gg \neg O(d_{i+1})$).

Counterfactual analysis intrinsically bears a categorical gap. Despite the classic philosophers' skeptical inquiries, the substantiality encoded in the notion of causation underlies almost every field of science. On the other hand, counterfactuals just form part of natural language and a particular pattern of reasoning. In one word, counterfactuals and causation belong to different categories.

Then, it becomes dubious, in what sense causation is accounted for in terms of counterfactuals. First, counterfactuals can't be the cause of causation, since this claim gives rise to infinite circularity of notions. Also, there is no intuition or theory supporting that the two notions are two different representations of the same entity. Moreover, the categorical gap precludes any conceptual or ontological equivalence between them.

If it's emphasized that equivalence holds between causation and counterfactual *dependence* instead of counterfactual conditionals, another problem would be inevitable, i.e. it's often the causation between actual events at issue while counterfactual dependence involves contrast between the actual world and other possible worlds. So advocates of counterfactual accounts would have to explain how facts about other possible worlds determine or influence causation in the actual world.

Kment [4] suggests that counterfactuals serve as guides to facts about causation rather than constitute them. Counterfactual tests are widely employed to explore causation between event types.

But the truth of relevant counterfactuals do not necessarily follow from the causation between events, as a consequence of over-determination and preemption. Although a variety of enhancements have been made to rescue this illusional connection (Bennett [1]; Hall [2]; Lewis [8]; Paul [9]), elaborate causal structures can always be found to falsify the counterfactuals which are alleged to follow from the particular causation. On the contrary, semantics of counterfactuals built upon causal mechanisms can predict the truth values of counterfactuals in accordance with intuition, given specific causal structures.

Therefore, it can be concluded that the notion of causation underlies semantics of counterfactuals rather than the converse.

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Ting Chi
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The ambiguity of modal expressions is a major obstacle to natural language processing (NLP). For instance, the meaning of the word *must* can vary greatly depending on the contexts. In sentences like *he must be lost*, the event *lost* modified by the modal word *must* is not necessarily a fact, but is highly probable; while in sentences like *he must leave*, it tells us nothing about whether the event *leave* will happen or not. This obviously presents a serious challenge to computers that need to analyze natural language with modal expressions.

To facilitate the understanding of modal expressions, researchers have attempted to classify modality into different types. These "modality types", despite the lack of unanimous agreement on a single method of classification, are useful tools for computers to learn modality. Returning to the example of *must - he must be lost* is an "epistemic" expression, pertaining predictions on possibility; *he must leave* is a "deontic" expression, pertaining obligation or permission. Therefore to overcome the challenge that modal ambiguity presented to NLP, a system that can automatically discern modality types is required.

It is the intention of this thesis to develop such a system for Chinese model expressions. The development of such a system is best conducted through supervised machine learning, teaching computers the syntactic structures and semantical interpretations of modality types in real speech. This thesis gathered Chinese speech materials from CHTB 4.0. Then these materials, sentences, are subjugated to annotation, which select the ones with modal expressions, mark the modality types and identify the determining attributes, such as prejacent, source and background. Signaling terms in these attributes - such as think or require - that are most likely associated with a particularly modality type are selected to form a feature set, while irrelevant terms are sifted out. These feature sets are used as the training data of supervised machine learning, telling computers which modality type is the most likely choice based on the presence of features in a given sentence. The computer analyzes these features through certain algorithms. This thesis chose to use three different algorithms - Naive Bayes, logistic regression and decision tree - to search for best result. Eventually, the "trained computer" will be able to automatically detect relevant features in a Chinese sentence, and understand its modal expression based on the modality type it identifies.

The systems this thesis produced show more than 92% accuracy in discerning modality types in Chinese.

The Semantics of the Korean Particles *i/ka* and *ul/lul*

Han-Byul Chung
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While Schütze (1996, 2001) analyzed the PARTICLEs appearing in (1) as focus markers, the PARTICLEs were not analyzed as focus markers in its entirety, since the particles may appear with discourse neutral NPs (2), or even with given information (3). This paper argues that (2) and (3) are not counterexamples to the claim that the PARTICLEs are focus markers all across the board by showing that i) it is not unusual for focus markers to appear with non-focused NPs, and ii) focus markers can appear with given information in verbatim repetition.

(1) Q1: Who is afraid of snakes?
    a. Na-**eykey-ka**   paym-i   mwusepta
        I-DAT-*ka*   snake-*i*   fearful
        'I am afraid of snakes.'   (Yoon 1996:110)
    Q2: Did Tom go to SUSAN?
    b. ani, Tom-un   Jane-**eykey-lul**   ka-ss-e
        no,   Tom-TOP   Jane-DAT-lul   go PAST-DECL
        'No, Tom went to JANE.'

(2) (Q: What's up?)
    A: John-**i**   Tom-**ul**   ttely-ess-e
        John(NOM)-i   Tom(ACC)-ul   hit-PAST-DECL
        'John hit Tom.'

(3) Q: John's what is big?
    A: John-**i**   son-i   khu-ta
        John-TOP   hand-i   big- DECL
        'John's hands are big.'

English marks focus with stress. However, stress is not always on the focused element. When the VP is given focus, internal argument is stressed and not the entire VP (4). In other words, the focus maker is appearing on a non-focused NP. Focus marker in Gúrúntúm also shows such behavior. Gúrúntúm has a focus marker *á*, which occurs before the focus (Hartmann & Zimmermann 2009). However, hen the VP is focused in Gúrúntúm, the focus marker does not appear before the VP, but before the internal argument (5).

(4) Q: What did John do?
    A: John gave a book to a BOY.

(5) Q: Á   kãèã   mái   tí   bá   pí?
        FOC   what   REL   3SG   PROG   do
        'What is he doing?'
    A: Tí   bá   ròmb -**á**   gwèí
        3SG   PROG   gather - FOC   seeds
        'He is gathering the seeds'

I argue that the PARTICLEs are not different from English and Gúrúntúm focus markers. While individual NPs marked by the PARTICLEs in (2) are discourse neutral, the sentence itself is generally claimed to be focused. Therefore, I argue that both the PARTICLEs in (2) are present to mark focus on

the entire sentence, which is exactly how English mark sentential focus (Katz & Selkirk 2011) (6).

(6) Q: What's up?
    A: ELIZA mailed the CARAMELS   (Katz & Selkirk 2011)

Since English uses stress to mark focus, given information is generally not given stress (7). However, there are instances where given information can be stressed (8). In a question/answer pair, when the answer is repeating a stressed element in the question, English may also stress the repeated NP, even when the NP is understood as given information (8a). However, stress may be on the repeated NP only when it is verbatim repetition (8b).

(7) Q: Who did John$_i$ kiss?
    A: #JOHN$_i$ kissed MARY

(8) Q: JOHN$_i$ kissed WHO?
    a. JOHN$_i$ kissed MARY
    b. #THE IDIOT$_i$ kissed MARY

The PARTICLEs are behaving exactly like the English focus markers in this sense. The PARTICLE in (3) may be understood as given information only when (3) is used in a question/answer pair with an identical focus marked antecedent in the question (9a). The PARTICLEs may not appear with given information if they are not used as verbatim repetition (9b).

(9) Q: John$_i$-**i**   son-i   khu-ni?
       John-i   hand-i   big-Q
       'Is John's hands big'
    a. John$_i$-**i**   son-i   kh-e
       John(TOP)-i   hand-i   big- DECL
       'John's hands are big'
    Q: John$_i$-**un**   son-i   khu-ni?
    b. #John$_i$-**i**   son-i   kh-e
       John(TOP)-i   hand-i   big- DECL
       'John's hands are big'

What I have shown in this paper is that the behaviors of *i*/*ka* and *ul*/*lul* that were previously thought as counterexamples to the claim that the PARTICLEs are focus marker in its entirety, as in (2) and (3), should not be construed as counterexamples, since other known focus markers also show similar behaviors, as in (4) and (8). Therefore, focus may be analyzed as the semantic property shared universally by all instances of the PARTICLEs.

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MODAL CONCORD: FROM A CORPUS PERSPECTIVE

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In this talk, I discuss the distribution of modal expressions embedded under attitude verbs with the aim of better understanding sentences like the one below from Zeijlstra (2008):

(1) The general **demands** that the troops **must** leave.

Sentences such as (1) are treated as a subtype of Modal Concord, the phenomenon where the semantics of a sentence with two co-occurring modal elements seems to contain only one operator (Geurt & Huitink 2006, Zeijlstra 2008, among others). When discussing sentences like (1), authors generally focus on the semantic mechanism that derives the concord reading, without considering the statistical nature of the concord usages. Questions like the following are not asked: does the embedding verb allow other modals in its complement? If so, is the concord case common or marginal compared to other combinations? Do all attitude verbs get involved in concord relation with some modal in its scope? Answers to the questions will shed light on sentences like (1) and Modal Concord in general. In the talk I will report my findings of the investigation done with the Penn Chinese Treebank 7.0 (CTB7).

I calculated the association between an embedded modal and the syntactic frame it appears in. For example, Table 1 shows the frequencies used to calculate the association between *yiding* and the frame *xiangxin*[$_{IP}$ …]. The measure employed is *pointwise Mutual Information* (PMI=$\log_2$(observed frequency/expected frequency)). Note that "not modal *yiding*" includes instances where there is no modal expression in the complement of *xiangxin*.

	xiangxin 'believe' - [$_{IP}$ …]	other attitude verb - [$_{IP}$ …]	Totals
Modal *yiding* 'defintiely'	observed: **14** expected = (76*188)/17893 = **0.799**	62	**76**
Not modal *yiding*	174	17643	17817
Totals	**188**	17705	**17893**

Table 1: Frequencies of *yiding* occurring in the complement of *xiangxin* in CTB7

	yiding 'definitely'	*kending* 'certainly'	*yinggai* 'should'	*keneng* 'might'	*dei* 'have to'	*neng* 'can'	*nenggou* 'be able to'	*keyi* 'may'	*bixu* 'must'
xiangxin 'believe'	**4.132**	**3.113**	0.573	-0.071	0.872	-0.128	1.528	2.018	-0.010
xiwang 'hope'	-1.357	N/A	-1.964	-1.723	-0.809	**2.835**	**3.515**	-0.441	-1.781
yaoqiu 'require'	0.379	N/A	-0.958	0.042	-1.017	-3.073	-0.640	-2.512	**2.655**

Table 2: PMI between attitude verbs and modals in their complements

Table 2 presents the PMI between three attitudes from the *doxastic*, *emotive*, and *directive* class and nine typical modal expressions in Mandarin. The **results** indicate that Modal Concord (bold and underlined) entails high PMI (not vise versa), which means that Modal Concord can be viewed as a kind of *collo-construction* where a normal compositional semantics is not expected. My proposal is that it is better to treat the concord modal as an agreement marker without its own force or treat the whole construction V_att [$_{IP}$…C-Mod…] as a single operator.

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Are three year olds really insensitive to factivity?

Rachel Dudley, Naho Orita, Morgan Moyer, Valentine Hacquard and Jeffrey Lidz, University of Maryland

How early do children understand presupposition? Are preschoolers able to make inferences based on the presence of a presupposition trigger? In this study, we address such questions by investigating three year olds understanding of the verbs *think* and *know*. We ask in particular whether they are able recognize the factivity of *know* and the non-factivity of *think*.

Previous studies show that children have difficulty with *think* until at least age four, and tend to respond based on the truth of the complement clause, rather than the truth of the whole sentence. They would thus reject a sentence like *John thinks that Mary is home* in contexts in which Mary is not home, even if John thinks that she is [1-5]. If children always assume that *think* sentences report true beliefs, their responses to affirmative *think* and *know* sentences should be similar and be based on the truth of the complement in the actual world. To see whether children are able to distinguish *think* and *know*, we need to look at their understanding in negative contexts. Given three year olds' tendency to assume that *think* only reports true beliefs, our paper addresses two questions: (a) have some children lexicalized *think* as *know*? and (b) what semantic representations do children have for *know*? More specifically we asked whether children are able to recognize the factivity of *know* and the non-factivity of *think* in negative contexts. In a context where the truth of the complement clause is unknown, are they able to use the factivity of *know* to infer the truth of the complement clause?

Previous research suggests that children do not differentiate *know* and *think* until at least age four [6-8] and some even argue that children might not have a fully adult-like understanding of *know* until much later [9-14]. However, this failure could be due to the metalinguistic nature of many of the tasks. We thus designed a task that allows children to demonstrate their understanding without having to explicitly compare sentences. We asked children to find a toy hidden in one of two boxes using clues in the form of attitude reports, using a 2x3 within subjects design with verb (*think* and *know*) and negation (none, embedded, matrix) as factors:

A) No negation: *Lambchop knows/thinks that it's in the blue/red box*
B) Embedded negation: *Lambchop knows/thinks that it's not in the blue/red box*
C) Matrix negation: *Lambchop doesn't know/think that it's in the blue/red box*
D) Control: *It's not in the blue/red box.*

Our results suggest that three year olds do distinguish *think* and *know*. We see that children are sensitive to the difference between verbs, the location of negation and the interaction of these factors. Children treated ¬*think p* differently from ¬*know p;* and they treated ¬*know p* differently from *know* ¬*p*. However, children's performance on ¬*know p* was distributed bimodally, with 16 children getting 0 or only 1 trial correct and 6 children getting 2 or all 3 correct. Performance was distributed normally around the mean in all other conditions. Sixteen of the participants reliably choose the opposite of the box that was mentioned, consistent with a non-factive representation for *know*. The remaining 6 participants reliably choose the box that was mentioned in their clue, consistent with a factive representation for *know*.

Our data suggests that some preschoolers might begin to understand *know* at an earlier age than earlier literature indicates. The behavior of roughly one third of our subjects is consistent with an adult-like understanding of *know*. The others, however, do not distinguish *think* and *know* even under negation, effectively treating neither one as factive. Thus some children distinguish *think* and *know* before age 4, even when they still assume by default that *think* sentences only report true beliefs. Moreover, we find no evidence that children build a factive representation for *think*. Still, our results suggest that children's early representations of *know* may be non-factive and raise the question of how children come to recognize that *know* is factive and *think* is not.

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Noun Phrase Ellipsis Revisited

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It is typically assumed that French and English examples as in (1) and (2) are to be treated in a unified fashion as involving noun phrase ellipsis (c.f. Lobeck 1991, 1995; Bernstein 1993; Sleeman 1996; Panagiotidis 2003; Alexiadou and Gengel 2009; Corver and van Koppen 2009, 2011).

(1) a. FRENCH
   Dix garçons sont entré dans la pièce.
   Plusieurs ___ $_{?P}$ se sont assis.

  b. ENGLISH
   Ten boys walked in the room.
   Many ___ $_{?P}$ sat down.

(2) a. FRENCH
   J'ai vu les garçons dans la cour. [Les *(grands) ___$_{?P}$] jouaient avec
   [les *(petits) ___].

  b. ENGLISH
   I saw the boys play in the yard. The *(tall) ONES played with the
   *(small) ONES.

I will propose that they should be analyzed as involving two different types of ellipsis: Those in (1) as involving the deletion of a partitive phrase containing a plural pronoun (Partitive Ellipsis), so that (1b) is underlyingly "many of them"; and those in (2) as involving a contrastive focus projection within the DP, where the modifier raises, and the use of one-anaphora (of category N) in English, where deletion of a noun phrase is found in French (following Corver and van Koppen 2009, 2011).

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1

Large-Scale Paraphrasing for Natural Language Understanding

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We present an overview of our recent and ongoing paraphrasing work. Our work encompasses large-scale extraction of syntactically annotated paraphrase pairs, which we learn from bilingual parallel corpora using the intuition of "pivoting" over foreign-language expressions: we assume two English expressions that translate to the same foreign expression to be meaning-equivalent.

Further, we utilize monolingual text corpora to collect distributional signatures for English phrases. This allows us to annotate the bilingually extracted paraphrases with an additional signal based on contextual similarity. As a result of this effort we release the paraphrase database PPDB, a collection of millions of automatically extracted and ranked paraphrases.

Additionally, we present a domain adaptation scheme for paraphrasing that relies on extracting paraphrases from only the parts of the general-domain data that are most similar to a sample of target domain data.

We also outline NattyLo, a project that will classify the extracted paraphrase collection into more fine-grained relation categories, like forward- and backward-entailment, aiming for better performance in tasks like recognizing textual entailment. NattyLo also includes the development of an entailment recognition approach based on parsing with synchronous context-free grammars.

1

Focus Effects on Directives
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What are the differences in how classes of directives interact with focus? Harner (2013) offers a characterization that distinguishes *advise* as focus sensitive in a way that *order* is not (1). This characterization shows that when focus is used in the scope of *advise*, only the focused material represents the advice, and the nonfocused material is not semantically indicated as advice (see 3a). Yet with a directive like *order,* both the focused and non-focused material is part of the order (see 3b). For this reason, altering the focus structure under *advise* will affect whether the sentence is judged true or false (see 2a and 2b). In contrast, focus structure under *order* does not affect truth values (see 2c and 2d). Yet focus structure under *order* does affect pragmatic felicity (compare 2c to 2d).

Based on the distinction of focus sensitivity in (1), directives are separated into two different classes: SUGGESTIVES such as *advise* display this focus sensitivity; MANDATIVES such as *order* do not. Harner (2013) proposes that this is a manifestation of semantic differences between the classes: predicates like *advise* are comparative; predicates like *order* are not. The semantics of *advise* compares the prejacent to a set of alternative worlds. The worlds where the prejacent is true rank more highly than the compared worlds where the prejacent is not true, based on the ordering source propositions (4). Focus interacts with the semantics of *advise* by indicating the set of worlds that is in comparison to the prejacent. *Order* lacks comparison to alternatives; its semantics state simply that the ordering source propositions are true in all those worlds where the prejacent is true (5). Thus focus has no effect on its semantics because it cannot indicate a set of worlds which are in comparison to the worlds where the prejacent is true.

This explanation of semantic differences accounts for the varying judgments between focus under *advise* and *order* as seen in (3a) and (3b). Yet it does not account for the judgment of infelicity based on focus structure under *order* as in (2d). I propose to account for this infelicity as an effect of focus on the pragmatics of *order*.

In order to explain focus effects on pragmatics, I draw a conceptual parallel between directives and modal auxiliaries. Modal auxiliaries differ in strength: a (semi-)auxiliary like *ought* is a weak necessity quantifier; *must* is a strong necessity quantifier. A common explanation for this strength difference (see e.g. von Fintel & Iatridou 2008) is based on whether the prejacent is true in all of the considered worlds (6). As proposed in Harner (2013), this explanation for strength differences between modal auxiliaries is applicable to differences between SUGGESTIVES and MANDATIVES; as discussed above, SUGGESTIVES have a comparative semantics, so are weak necessity quantifiers, and MANDATIVES lack comparative semantics so they are strong necessity quantifiers. Having shown that these directives behave either like weak or strong modal auxiliaries, I offer an explanation for their pragmatics based on Rubinstein's (2012) explanation of the pragmatics of weak and strong modal auxiliaries. She argues that weak necessity *ought* is used when there is a presupposition that there is no collective commitment to some of the ordering source propositions, but strong necessity *must* presupposes collective commitment for all ordering source propositions. I revise this analysis in order to extend it to directives. I then show that these presuppositions account for judgments of infelicity as seen with *order* in (2d).

(1) **Characterization of focus sensitivity for propositional attitude verbs,** from Harner 2013: When a predicate P takes a sentential complement which has both focused and backgrounded, *i.e.* non-focused, material [$_{S1}$P[$_{S2}$F,B]], then only F is P'ed; B is not P'ed.

(2) **Scenario:** *Penny's major decisions* (from Harner 2013): Penny is going to start college next year. She was accepted at both Georgetown and George Washington but can't decide which school to attend. Her interests are also very diverse: she has been wavering between studying linguistics or public policy. Recently, she had decided to study public policy, rather than linguistics. Her friend, Mark, and her father, Mark, believe that public policy is a terrible major for her and that linguistics is a much better fit. Both Marks also believe that Georgetown is a better school to attend than George Washington.

Mark the friend: Mark tries to persuade Penny to study linguistics but Penny is firm that she wants to study public policy. Mark respects Penny's wishes for her major and gives her advice to attend Georgetown to study public policy.

      (2a) Mark advises Penny to study public policy at GEORGETOWN. (True)

      (2b) Mark advises Penny to study PUBLIC POLICY at Georgetown. (False)

Mark the father: Mark tries to persuade Penny to study linguistics but Penny is firm that she wants to study public policy. Mark respects Penny's wishes for her major and orders her to attend Georgetown to study public policy.

      (2c) Mark orders Penny to study public policy at GEORGETOWN. (True)

      (2d) ? Mark orders Penny to study PUBLIC POLICY at Georgetown. (True?)

(3) **Scenario:** [*continued*] Penny ends up going to Georgetown to study public policy, but she doesn't like it as a major. Frustrated, she returns to Mark and asks him why he told her to study it.

Mark the friend: Mark tries to excuse himself from reminding Penny of his advice.

      (3a) "Look Penny, I advised you to study public policy at GEORGETOWN, but I
      didn't advise you to study PUBLIC POLICY at Georgetown."   (True, Coherent)

Mark the father: Mark tries to excuse himself by reminding Penny of his order.

      (3b) "Look Penny, I ordered you to study public policy at GEORGETOWN, but I
      didn't order you to study PUBLIC POLICY at Georgetown."   (False, Incoherent)

(4) *advise(p)(α)(w)* = true in w iff p is better than non-p-alternatives according to f(w) and g(w)

(5) *order(p)(α)(w)* = true in w iff p is true in all worlds compatible with f(w) and g(w)

(6) von Fintel & Iatridou 2008, p. 119 "[S]trong necessity modals say that the prejacent is true in all of the favored worlds, while weak necessity modals say that the prejacent is true in all of the very best (by some additional measure) among the favored worlds.

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The Icelandic Causation of Experience Construction
Implications for Syntax and Semantics

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The Icelandic Causation of Experience construction (CEx), shown in (1), inolves a triggering event that causes a morphosyntactically nominal 'experience event' where the experiencer can be mentioned as a dative argument of the experience denoting noun. Its passive variant contains a *by*-phrase, which is obligatory in contrast to the *by*-phrase of clausal passives (and other adjunct material, more or less).

(1)   a.   Dansinn   var [stelpunum   (góð)   skemmtun].   (CEx, Predicate)
            dance.the.NOM was [girls.the.DAT (good) entertainment.NOM]
            'The dancing entertained the girls (well)'

       b.   Stelpunum   var [skemmtun   *(af dansinum)].
            girls.the.DAT was [entertainment.NOM *(by dance.the)]   (CEx, Passive)
            'The girls were entertained by the dancing'

       c.   Stelpunum   var [skemmt   (af dansinum)].
            girls.the.DAT was [entertained.PASS (by dance.the)]   (Clausal Passive)

The requirement that the causing event is expressed overtly in the nominal variant provides a window into the difference between clauses and noun phrases in the context of causatives. The causing event in the clause is associated with structurally present material which introduces the causer (or an overt manifestation of the causing event itself) (cf. Parsons 1990, Pylkkanen 2008). From the point of view of adjunct syntax, an obligatory *by*-phrase is surprising. Therefore, I pursue an explanation in terms of an ill-formed introduction of the causing event in the noun phrase variant. This approach may offer independent evidence for what it takes to license existential closure of a Davidsonian event variable.

The CEx construction also has consequences for the theory of Appl-introduced experiencers (as developed by Pylkkanen 2008). The construction robustly and productively licenses such arguments in a noun phrase context, without a transparent mapping from all the potentially corresponding verbal structures, suggesting independence of Appl and verbs. Finally, I consider the behavior of the CEx construction in intensional contexts and how these relate to the overall analysis.

A syntactically conservative approach to Bolinger effects

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Introduction/goal of talk. Word-order-sensitive adjective ambiguities are sometimes referred to as "Bolinger contrasts" or "Bolinger effects." Two especially well-known examples are the pre-/postnominal alternations between restrictive (R) and nonrestrictive (NR) interpretation ((1)), and between s(tage)-level and i(ndividual)-level interpretation ((2)).

(1)   a.   Every <u>unsuitable word</u> was deleted.   (Larson & Marušič 2004:275)
             Restrictive: "Every word that was unsuitable was deleted."
             Nonrestrictive: "Every word was deleted; they were unsuitable."
    b.   Every <u>word unsuitable</u> was deleted.   *Restrictive*, *#Nonrestrictive*

(2)   a.   the <u>visible stars</u>   *s-level*, *i-level*   (Bolinger 1967)
    b.   the <u>stars visible</u>   *s-level*, *#i-level*

(Non)restrictivity and s-/i-level are semantically unrelated properties, but the alternations appear to pattern syntactically in a parallel fashion. Furthermore, relative distance from the noun partially determines which reading(s) an apparently ambiguous adjective can receive.

(3)   *s-level>i-level*, *#i-level>s-level*

    a.   The invisible visible stars include Capella.   (Larson 1998, attributed to B. Citko)
    b. #The visible invisible stars include Capella.

(4)   *intersective>adverbial*, *#adverbial>intersective*

    a.   Olga is a blond beautiful dancer.   (*beautiful and a dancer*, *dances beautifully*)
    b.   Olga is a beautiful blond dancer.   (*beautiful and a dancer*, *#dances beautifully*)

In this talk, I argue that the syntax of Bolinger effects follows from the lexical semantics/ morphological structure of specific words, and the nature of bottom-up semantic composition. It is therefore unnecessary to posit otherwise unmotivated syntactic structure to explain Bolinger effects, as in the accounts of Larson (1998); Larson & Marušič (2004); Cinque (2010); a.o. I provide evidence for this claim by examining four case studies: ***(i)*** restrictive/nonrestrictive ((1)); ***(ii)*** s-/i-level ((2)); ***(iii)*** intersective/adverbial ((4)); and ***(iv)*** direct/implicit relative readings of *possible* and related adjectives (e.g. *Mary interviewed every possible candidate*, see Larson 2000).

Analysis sketches.

***(i)* restrictive/nonrestrictive (R/NR).** I argue that this distinction is a pragmatic one; i.e. there is no grammatical difference between a R and NR reading. NR modifiers cannot be focused (Umbach 2006), and postnominal modifiers are generally not NR. I therefore hypothesize that DP is a prosodic domain in which the phrase-final position bears highest default stress. This means that postnominal modifiers are in some sense "inherently focused/contrastive," which is incompatible with NR interpretation. Other putative Bolinger effects described by Cinque (2010:19) are shown to follow from composition order on any reasonable definition of "(non)restrictive."

***(ii)* s-/i-level.** I adopt Kratzer's (1995) position that what distinguishes an s- from i-level predicates is that the former has an additional davidsonian (event) argument. Combining this with the idea that (some) postnominal adjectives are reduced relative <u>clauses</u>, postnominal *visible* has an event variable in its semantics (assuming clauses denote event predicates). Prenominal adjectives need not be reduced relatives, so a prenominal adjective should be ambiguous (as in (2a)).

(iii) **intersective/adverbial.** I adopt Larson's (1998) view that some adjectives can be event- or individual-predicates. I propose that a deverbal noun like *dancer* is decomposed into *dance* and a nominalizing suffix *-er*, and that an event-predicate adjective can combine with a verbal root to the exclusion of (some) verbal affixes. So the ambiguity of *beautiful dancer* is structural:

(5)   a. $[_N [_V [_{Adj_{adv}}$ beautiful $] [_V$ dance $]] [_{V \to N}$ -er $]]$ (*adverbial*, "dances beautifully")

        b. $[_N [_{Adj_{int}}$ beautiful $] [_N [_V$ dance $][_{V \to N}$ -er $]]]$ (*intersective*, "beautiful and a dancer")

This simple analysis derives a number of Bolinger effects, e.g. (4) and others to be discussed.
(iv) **"direct"/"implicit relative (IR)" *possible*.** Following Larson (2000) and Romero (2011), I analyze IR *possible* (type $\langle t,t \rangle$) as an ACD construction. Direct *possible* ($\langle \langle e,t \rangle, \langle e,t \rangle \rangle$) is simply an attributive modifier that operates on the denotation of N.

(6)   a.   *IR reading:* $[_{DP}$ every candidate $\lambda x [_{CP}$ possible $[_{IP}$ PRO $[$ TO $[_{VP}$ interview $x]]]]]$

             . $\lambda x [_{IP}$ Mary PAST $[_{VP}$ interview $x]]$

        b.   *Direct reading:* $[_{IP}$ Mary PAST $[_{VP}$ interview $[_{DP}$ every $[_{NP}$ possible candidate $]]]]$

The Bolinger effects for *possible* fall out from the distinction between "attributive"/"propositional" *possible*, and the observation that ACD relative clauses always scope above other modifiers.

Significance.

Examples like (1)-(4) have been taken to constitute powerful evidence for an articulated nominal skeleton containing silent structure, empty operators, and requiring stipulated ordering restrictions (Larson 1998; Cinque 2010; a.o.). "Two-domains" theories of modification claim that "direct modifiers" are associated with NR/i-level/adverbial/etc. interpretation, and receive these semantic properties from covert syntactic material. "Indirect modifiers" are structurally more distant from the noun and are associated with the opposing set of readings (R/s-level/etc.).

(7)   *Syntactic two-domains theories of modification/Bolinger contrasts*

        a. $[_{DP}$ D $[$ AP$_{indirect} [[_{XP}$ AP$_{direct} [_{X'}$ X NP $]]$ AP$_{indirect}]]]$ (Cinque 2010)

            (functional head X imposes semantics on AP$_{direct}$)

        b. $[_{DP} \exists e [$ AP$_{indirect} [\Gamma e [_{NP}$ AP$_{direct}$ N $]]$ AP$_{indirect}]]$ (Larson & Marušič 2004)

            (Only AP$_{direct}$ is in the scope of generic event quantifier Γe)

By showing that the syntactic properties of *(i)-(iv)* follow from semantic and architectural considerations, we obviate the need for covert syntactic operators and an articulated DP structure in the analysis of (1)-(4). This result provides preliminary evidence that closer inspection of <u>all</u> Bolinger contrasts will reveal that they can be explained without positing an articulated and semantically enriched syntax, allowing for a more transparent mapping from lexical meaning and overt morphological/syntactic structure to truth-conditional meaning.

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Participant Sharing in Chinese Resultatives
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Introduction: Chinese resultatives take the form of verb compounds V_1-V_2, V_1 denoting an activity e_1 and V_2 its resultant state s_2. An example is given in (1). Following the literature, I call these compounds Resultative Verb Compounds (RVCs) and I use S+V_1-V_2+O as a general schema to represent sentences containing RVCs (S is RVC's subjects, while O is its object).

Thesis: This talk is mainly about the relations between O and the two verbs V_1, V_2. I will claim: although the direct object O is only an argument of V_2, not V_1, it has semantic relations both to V_1 and V_2. I then use thematic relations to model this semantic relation and propose a semantic constraint—Participant Sharing—to ensure the required relations. Finally, I implement the participant-sharing idea by adding into the semantic rule of resultative formation a conjunct ⟦O⟧∈ Θ (e_1), which requires the argument of V_2 must also receive a thematic role from V_1.

(1) *Zhāngsān kǎn-diào le   shùyè*
     Zhangsan hack-fall PERF leaves
     Zhangsan hacked the leaves and the leaves fell off.

Problem with Argument Sharing: Since there are two verbs but only two argument positions S and O, assuming both individual verbs have their own theta roles to assign, it is natural to ask: where does the additional theta role go if V_1 is transitive? It is easy to show an Argument Sharing idea (Li 1990) cannot be right. Look at (2): (2) is an example of unergative verbs being V_1, in which case, the O is not an argument of V_1 and Argument Sharing cannot be satisfied.

(2) *Zhāngsān kū-shī   le   shǒupà*   (*Unergative V_1*)
     Zhangsan cry-wet PERF handkerchief
     Zhangsan was crying and his handkerchief got wet as a result.

Worse still, there are transitive V_1 but without argument sharing; following Lin (2004), I call these cases unselective transitive V_1, see (3).

(3) *Zhāngsān kǎn- dùn   le   fǔ-zi*   (*Unselective transitive V_1*)
     Zhangsan hack-blunt PERF axe
     Zhangsan hacked something and the axe got blunt.

A comparison between (1) and (3) shows we will never know when Argument Sharing is to be applied. Thus, such a theory makes no prediction and is unattractive.

Problem with Pragmatic Association: Based on examples like (2) and (3), Williams (to appear) proposes another analysis, which I call Pragmatic Association. In this theory, a thematic relation between V_2 and O is always present, but there is no thematic relation between V_1 and O. Any understood relation of O to V_1 is pragmatically inferred or obtained by world knowledge. Take (3) as an example. In a Pragmatic Association analysis, it means '*Zhangsan hacked something, and the axe got blunt as a result*' and pragmatics tells us that *the axe* is the instrument of *hacking*.

However, this analysis cannot be right either. It over-generates interpretations that are not possible. Again, take (1) as an example (this argument is adopted from Lin 2004), the pragmatic association will predict it can either have (4a) or (4b) as its interpretations. But (4b) is impossible, as can be shown by the contradiction in (5). In other words, the O in (1) has to be interpreted as the patient of *hacking*. Notice, this problem cannot be solved by Kratzer's (2005) (citing Bittner 1999) Direct Causation either, since Mandarin Chinese has many RVCs that do not involve Causation, e.g. *xie-cuo* (write-wrong), *shui-xing* (sleep-awake)

(4) *Zhāngsān kǎn-diào le   shùyè*
     Zhangsan hack-fall PERF leaves
     Zhangsan hacked the leaves and the leaves fell off.

a. Meaning: Zhangsan hacked the leaves, and the leaves fell.

b. **Impossible**: Zhangsan hacked the tree and the leaves fell.

(5)   *#Zhāngsān kǎn-diào le   shùyè,   dàn tā méi kǎn shùyè*

Zhangsan hack-fall PERF leaves,   but he not hack leaves

a. #Zhangsan hacked the leaves and the leaves fell off, but Zhangsan did not hack the leaves.

b. **Impossible**: Zhangsan hacked something and the leaves fell off, but Zhangsan did not hack the leaves.

Participant Sharing: In view of the above failures, a new constraint I call Participant Sharing is proposed. The Participant Sharing constraint says (6) and it actually treads a middle ground between the two earlier proposals—it enforces a grammatical relation between V_1 and O (unlike the Pragmatic Association approach), but it denies an Verb-Argument relation between V_1 and O (contra Argument Sharing) and by doing this it leaves open what the precise relation will be.

(6)   Participant Sharing: To combine two verbs V_1, V_2 into an RVC V_1-V_2, the event introduced by V_1 and the event introduced by V_2 have to share at least one participant.

(6), together with the common (Lin 2004, Kratzer 2005, Williams 2011) assumption as is in (7), gives the correct results to (1), (2) and (3). Notice (7) is at least motivated by (2) and (3).

(7)   Antipassive Assumption: O is never an argument of V_1;

First, (7) solves the problem faced by Argument Sharing by directly denying the principle. But crucially, the effects of Argument Sharing are preserved by the new constraint. Specifically, in (1)-type cases, although the O *leaves* is interpreted as the patient of *hack*, it is not an argument of it; the patient relation between *leaves* and *hack* is instead enforced by the participant sharing constraint (6). Likewise, in (2) participant sharing is satisfied by letting O *the handkerchief* receive an locative role from the V1 *cry*; in (3) the participant sharing condition is also met by allowing *the axe* to receive a instrument role from the V_1 *hack*. **Second**, (6) solves the over-generation problem faced by Pragmatic Association, by excluding any sentence/interpretation whose O does not receive a theta role from V_1 of the RVC. Specifically, in (4b), the *tree* received the patient role from the V1 *hack*, putting *leaves* in a situation where it can receive no imaginable thematic role, violating the Participant Sharing constraint.

Implementation: Below, I try to formalize the ideas discussed above using Davidsonian event semantics (Davidson 1967). Two points need to be mentioned for this formalization. **First**, existentially binding of the internal argument of V_1 represents the idea that O is never an argument of V_1; **second**, the participant sharing idea is modeled by the conjunct in the semantic representation $x \in \Theta (e_1)$. While $[\![\Theta]\!] = \lambda e \lambda x$ (x bears a theta role to e).

(8) shows the relevant RVC-formation rule. Notice, *e* and *s* are eventuality variables, C might either be a Causal relation (Kratzer 2005) or Temporal relation (Rothstein 2004) between eventualities. Finally, $x \in \Theta (e_1)$ leaves room for pragmatics to play. Pragmatics will be the actual factor to determine which element from the set $\Theta (e_1)$ is to be selected by x.

(8)   a. Transitive V_1: $\lambda x \lambda y \lambda e_1[P (x)(y)(e_1)] + \lambda x \lambda s_1[Q (x)(s_1)]$

        $= \lambda x \lambda y \lambda e_1 \exists z \exists s_2[C(e_1)(s_2) \wedge P(z)(y)(e_1) \wedge Q(x)(s_2) \wedge x \in \Theta (e_1)]$

        b. Intransitive V_1: $\lambda x \lambda e_1[P (x)(e_1)] + \lambda x \lambda s_1[Q (x)(s_1)]$

        $= \lambda x \lambda y \lambda e_1 \exists s_2[C(e_1)(s_2) \wedge P(y)(e_1) \wedge Q(x)(s_2) \wedge x \in \Theta (e_1)]$

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A necessity priority modal and its interaction with tense in Korean
Bokyung Mun (Georgetown University)

Previous literature has revealed that the interaction of a modal with tense or aspect forms often gives rise to some unexpected inferences. For example, the combination of modal auxiliaries with the perfect *have* in English often yields the counterfactual interpretations. This poster focuses on a similar phenomenon found in Korean. That is, when a necessity priority modal *–eya ha–* 'must/should' combines with past tense morphology, the sentence yields the 'non-actualization' inference.

Phenomenon Unlike (1a), a priority modal sentence having a past complement, as in (1b), conveys two propositions: i) Chelswu was obliged to do his homework (an obligation meaning), and ii) He did not do it (a non-actualization inference). The non-actualization inference is somewhat unexpected given the fact that priority modal sentences like *must* p or *should* p (i.e. with non-past complements) are used to express necessities, not to convey either p or ¬p. I address the following questions: (A) The nature of the 'non-actualization' inference in priority modal sentences in Korean: whether it is entailed, presupposed, or implicated, and (B) how this inference is derived.

Analysis I first try to answer (A). We cannot characterize the non-actualization inference in (1b) as a conversational implicature since this inference cannot be canceled, as shown in (2). This inference cannot be a regular entailment either, since there is an intuition that the obligation meaning is foregrounded and the non-actualization inference is backgrounded. This becomes evident if we consider (3). In (3), B can agree or disagree with A about the proposition that 'Chelswu was obliged to do his homework,' not that 'he did not do his homework.' The fact that the direct responses *I agree* or *I don't think so* cannot target the non-actualization inference suggests that the status of this inference is different from the at-issue, foregrounded content (the obligation meaning). In this sense, the inference seems to behave like a presupposition. In fact, the non-actualization interpretation is not affected by negation, as in (4). Since the inference does not survive under a conditional, as in (5), however, it is difficult to conclude that the non-actualization inference is a presupposition. In addition, this cannot be treated as a presupposition because the inference can provide new information (=not in the common ground), as (6) illustrates. Focusing on its non-cancelable but not-at-issue property, I show that the 'non-actualization' inference can be characterized as a 'backgrounded entailment' (Herburger's (2000) term; to use Horn's (2002) terminology, it is *assertorically inert*).

    Now I turn to (B). Following Condoravdi, I assume that tense morphology is semantically treated as a temporal operator, and I propose that the expected interpretations of modal sentences can be derived from the semantics of tense and modality. In discussing temporal interpretations of modal sentences, it has been noted that modality involves two times: (i) the time from which the modal background is accessed (MOD-T), and (ii) the time at which the eventuality/situation described by the complement of the modal holds (SIT-T). In addition to these two times, the time of utterance is always given as the present (UT-T). In Korean, MOD-T is determined by the tense of the modal expression, and SIT-T is set by the embedded tense, which is realized within the main predicate. In order to derive the non-actualization inference in (7b), I argue that lexical meanings of priority modals entail in the backgrounded way that 'the situation described by the main predicate has not been actualized yet by the time of utterance.' If the modal combines with a present complement, the sentence implies that 'the situation has to be done at the time of utterance.' Since UT-T is prior to SIT-T, the situation can be actualized; hence, there is no non-actualization inference in (7a). When the modal is combined with a past complement, as in (7b), however, since SIT-T is prior to UT-T in deontically accessible worlds, the sentence implies that 'the situation cannot be done at the time of utterance,' which yields the non-actualization inference.

(1)   a.   Chelswu-nun   swukcey-lul   hay-ϕ-eya ha-n-ta.
           Chelswu-TOP homework-ACC do-PRES-MODAL-PRES-DEC
           'Chelswu should do his homework.' (inf: ϕ)

        b.   Chelswu-nun   swukcey-lul   hay-ss-eya ha-n-ta.
           Chelswu-TOP homework-ACC do-PAST-MODAL-PRES-DEC
           'Chelswu should have done his homework.'(inf: He didn't do it.)

(2)   Chelswu-nun   swukcey-lul   hay-ss-eya ha-n-ta.   #Silceylo hay-ss-ta.
      Chelswu-TOP homework-ACC do-PAST-MODAL-PRES-DEC in fact   do-PAST-DEC
      'Chelswu should have done his homework. #In fact, he did it.'

(3)   A: Chelswu-nun   swukcey-lul   hay-ss-eya ha-n-ta.
           Chelswu-TOP homework-ACC do-PAST-MODAL-PRES-DEC
           'Chelswu should have done his homework.'

        B: Na-to kulehkey sayngkakha-y.
           I-too so   think-DEC
           'I agree.' (I agree that he was obliged to do it./#I agree that he didn't do it.)

(4)   Chelswu-ka   swukcey-lul   hay-ss-eya ha-nun-kes-un   ani-ta.
      Chelswu-NOM homework-ACC do-PAST-MODAL-PRES-BN-CT NEG-DEC
      'It is not the case that Chelswu should have done his homework.'

(5)   ?Chelswu-ka   swukcey-lul   hay-ss-eya ha-n-ta-myen   pel-ul
      Chelswu-NOM homework-ACC do-PAST-MODAL-PRES-DEC-if punishement-ACC
      pat-ul kes-i-ta.
      receive-MODAL-DEC
      'If Chelswu should have done his homework, he will be punished.'

(6)   A: Chelswu-nun   way honna-ko.iss-e?
           Chelswu-TOP why being.scolded-PROG-INT
           'Why is Chelswu being scolded?'

        B: Chelswu-nun   swukcey-lul   hay-ss-eya   ha-ϕ-y.
           Chelswu-TOP homework-ACC do-PAST-COMP AUX-PRES-DEC
           'Chelswu should have done his homework.'

(7)   a.   Modal worlds: —[MOD-T]/[UT-T]—[SIT-T]— (=(1a))
           Actual world: ——————————¬SIT

        b.   Modal worlds: —[SIT-T]——[MOD-T]/[UT-T]— (=(1b))
           Actual world: ————————————————¬SIT

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Equating sentences: A type-shifting operation on propositions
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This paper analyzes the semantics of a previously understudied but stable sentence type, the copular amalgam, which is used colloquially by many speakers of American English. Examples are given in (1)–(2) below.[1]

      (1)   [$_{S1}$ That's what she ate] is [$_{S2}$ she ate a bagel].

      (2)   [$_{S1}$ She should eat that] is [$_{S2}$ she should eat a bagel].

In a copular amalgam, the copula relates two sentences, S1 and S2, where S1 contains an indexical with a discourse antecedent (the **variable**) and S2 contains an expression that is coreferential with the variable (the **value**). A semantic account of copular amalgams must address (i) the relationship between S1 and S2, (ii) the interpretation of the variable with respect to the value, and (iii) the contribution of the copula to the meaning of the sentence. The present paper does so by positing a type-shifting operation that applies to S2, turning it into an identity function over propositions.

      Copular amalgams have peculiar properties compared to other, better-studied copular sentence types. Most of the previous literature on copular sentences examines sentence types in which the copula relates an entity-denoting expression and a predicate, as in (3), or two entity-denoting expressions, as in the equative example in (4). Also well studied are specificational copular sentences, as in (5), where the first expression includes a variable, and the second provides the value for that variable.

      (3)   Cicero is a great writer.   (predicational)

      (4)   Cicero is Tully.   (equative)

      (5)   The teacher is John.   (specificational)

Copular amalgams differ from these in that the two expressions related by the copula are propositions: neither has an <e>-type or <et>-type interpretation and they do not distribute syntactically like the subject and predicate of a clause. Neither S1 nor S2 can be pronominalized by *it* or *that*, pro-forms that can replace clauses as long as they have <e> or <et>-type readings, respectively. S1 and S2 cannot be embedded in a small clause under *consider*, so they are not generated in the same subject and predicate positions as their counterparts in canonical copular sentences. The variable and the value are not directly related in the syntax via the copula, unlike in (5). In addition, the copula in an amalgam is morpho-syntactically constrained, occurring only as *is* or *was*: it cannot host plural phi-features, modals, auxiliaries, or negation. These syntactic facts lead to the conclusion that the copula in an amalgam spells out a simple functional head, a species of conjunction, relating two root sentences.

      While a conjunction like *and* can relate sentence with wildly different meanings, the meanings of S1 and S2 are not independent. In fact, S1 and S2 have the same truth conditions:

      (6)   [[copular amalgam sentence]] = [{w′: [[S1]] in w′} = {w″: [[S2]] in w″}]

The answer to the first component of the analysis is that the relationship between S1 and S2 is one of equation. The two sentences are very close to content-synonymous on their surfaces, but there is one mismatch: S1 contains a variable that is coindexed with a discourse antecedent, and S2 contains a referring expression in place of the variable. This brings us to the second component of the analysis: there is no direct syntactic or semantic relationship between the variable and the value; rather, the copular amalgam identifies the variable with the value by equating the truth conditions of the propositions in which they are embedded. The specificational interpretation of the copular amalgam thus comes about indirectly.

      The final question then arises as to the source of the equative meaning: either the copula means identity, or identity is encoded elsewhere. The present paper takes the latter course, following Partee (1986), den Dikken (2006), Geist (2007), and others, in maintaining that there is only one *be*--the vacuous copula of predication, and that type-shifting operations give rise to equative semantics. I propose that alongside Partee's **ident**, which maps entities onto predicates, there is a type-shifting operation **ident$_p$**,

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[1] This paper only discusses deictic copular amalgams; I address *wh*-amalgam pseudoclefts like *what she should do is she should eat a bagel* and reverse *wh*-amalgam pseudoclefts in previous work.

which takes a proposition of type $<s,t>$ and returns a set of propositions of type $<<s,t>,<s,t>>$. In copular amalgams, it applies to the intension of S2, taking the set of worlds where its denotation is true, and returning the singleton set containing that set of worlds:

(7) $\mathbf{ident_p}(p) = \lambda q[q=p]$

The meaning returned by **ident_p** can be paraphrased: 'have the same truth conditions as *p*.' The raised version of S2 is then applied to S1 via the copula, which is a semantically vacuous mediator of predication. A copular amalgam sentence is true if the intension of S1 is the unique member of the set denoted by S2.

The present paper argues that an identity relation such as this, mediated by the copula, does not require a copula imbued with equative semantics, either by the lexicon or by a type-shift applied to the copula itself (contra Schlenker 2003; Geist 2007, respectively). One reason for this is that the copula of an amalgam is optional. Even when it is not present, the interpretation of the relationship between S1 and S2 remains the same:

(8)   SPEAKER A: I've really been missing the outdoors lately. We should do something to enjoy the nice weather, like maybe camping or hiking or something.

      a.   SPEAKER B: That's what we should do, (is) we should go camping.

      b.   SPEAKER B: #That's what we should do, (is) we should stay inside.

The sentence in (8b), even without the copula, is infelicitous, since it indirectly identifies *that* with *stay inside*, even though *go to the mall* is not among the possible discourse antecedents for *that*. The copula is thus not essential to the equative interpretation.

This paper provides new empirical support for the 'one-*be*' polymorphic approach to the copula (e.g., Partee 1989). By extending the domain of the natural type-shifting operation **ident** to propositions (**ident_p**), this paper captures the equative relationship between S1 and S2 in a copular amalgam and the specificational character of the relationship between the variable and the value, and predicts that the copula itself makes no semantic contribution to the sentence.

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Interpretation as Optimization: (So-called) Privative Adjective Constructions

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Privative adjective constructions include adjectives like *fake* and *counterfeit*. According to the traditional classification of adjectives [Kamp and Partee, 1995], composite structures involving these modifiers have an extension that has no overlap with the extension of the noun. For example, a fake gun is not in the positive extension of *gun*. However, Partee has recently argued, on the basis of NP-splitting phenomena in Polish, that there are no privative adjectives [Partee, 2003, Partee, 2010]. Everything that we would have called a privative adjective is really just a subsective adjective construction that has been coerced. While this is a compelling proposal, the proposed coercion operations has yet to be explored in detail. I argue that Partee's coercion operation reduces to optimization over conflicting constraints on interpretation. To formalize this account, I deploy a default logic [Reiter, 1980] where each constraint on interpretation corresponds to a default rule.

Part of Partee's proposal rests on the fact that expressions such as (1) seem felicitous, which is unexpected given the traditional account of privative adjectives.

(1)   Is that gun real or fake?

To account for this fact, Partee has suggested that *gun* is coerced to include both guns and non-guns when it occurs in the presence of modifiers like *real* or *fake*. After coercion, the expression is interpreted subsectively. One complication with this proposal is that it seems false to say that *gun* is coerced to include all guns and non-guns given that this expression would be infelicitous if the speaker had chosen a fork as a referent of *gun*, but this is predicted to be acceptable given that *gun*, in this instance, refers to guns and non-guns. This raises an additional question that my proposal will help to resolve: What are the limits of the proposed coercion operation?

I propose that every adjective or noun contributes constraints on interpretation that are derived from the constituent's lexical entry. For example, *gun* would contribute a constraint on interpretation, derived from the telic component of the lexical entry [Pustejovsky, 1995], that requires that the intended referent be capable of firing a bullet. Similarly, the modifiers *fake* and *counterfeit* would contribute constraints on interpretation that target dimensions of the qualia structure of the noun [Pustejovsky, 1995]. Specifically, I propose that *fake* contributes two constraints on interpretation: (a) The intended referent does not have the function (telic quale) specified by the noun and (b) The intended referent does not have the source/origin (agentive quale) specified by the noun.

To interpret the expression "fake gun", we iteratively enter these constraints, construed as default rules, into the theory. This constrains the extension to the class of entities that do not have the function or origin specified by the noun. After entering these constraints into the theory, we iteratively enter each of the constraints, construed as default rules, contributed by the noun. Since the theory already contains expressions derived from the default rules contributed by *fake*, only the default rules that correspond to properties that are compatible with not having the origin or function of a gun will be entered into the theory. The resulting theory is modeled by a set of entities that have all the properties of a gun that are compatible with not functioning as a gun and not having the origin of a gun.

The proposed formalism has several useful consequences. First, it accounts for the felicitousness of sentences like (1). Since all adjectives and nouns are interpreted as collections of constraints on interpretation, *gun* is permitted to refer to the most gun-like, contextually salient entity, which may or may not be a gun. Importantly, this interpretation strategy accounts for the infelicity of (1) when

1

the speaker is referring to a fork, which is unlikely to be the most gun-like entity in the context of the discourse. Second, the proposed formalism can be viewed as an augmentation of the standard compositional account, rather than a replacement. On the standard compositional account, adjectives are functions from properties to properties [Parsons, 1970, Kamp, 1975, Heim and Kratzer, 1998] . In the proposed framework the resulting property is just the characteristic function of the derived extension. Third, the coercion operation is limited by the constraints imposed by the noun. Coercion, on this account, must result in a class of entities that satisfies some subset of the constraints imposed by the noun. Finally, the proposed account "builds-in" the Non-vacuity Principle given that optimization will always converge on a winning candidate, which in this instance amounts to an extension for the composed expression.

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2

Imperatives and grades of modality

Paul Portner (Georgetown)

A common strategy for exploring the semantics of imperatives, and in particular the commitment slates or preference states which imperatives help create, has been to investigate the relationships between imperative and modal sentences in discourse (e.g., Lewis 1979, Portner 2007, Kaufmann 2011, Charlow 2011, Starr 2012, Aloni and Ciardelli 2011). This strategy has not, however, taken account of much of the structure of the modal domain; specifically, it has not used the fact that modal expressions are gradable (Portner 2009, Yalcin 2010, Lassiter 2011).

Many modal expressions, across all subtypes of modality, are gradable – sometimes generally, sometimes in particular contexts. An examination of the contexts in which deontic elements like legal, illegal, correct, and to code are gradable reveals what features those contexts have which allow for the definition of deontic scales. Roughly speaking, we find that deontic gradability can occur when the "rules" which underlie the truth conditions for deontic expressions (the conversational backgrounds, in Kratzer's terms) can be differentiated in terms of the following: (a) their rank within the system of rules, (b) the level of commitment towards them in the context of use, and (c) the speaker's degree of certainty concerning their applicability.

In this setting, we can better explain variation in the force of imperatives (and performative modal sentences) in terms of the way they contribute to the creation of deontic scale structures.

Mirativity within the typology of surprise-expressions

Teresa Torres Bustamante (Rutgers University)

Natural language employs different means to express speaker's surprise. While English has exclamations (1) and exclamatives (2), Spanish has in addition to these (3a-b) a mirative construction (4). As reported in the literature (Elliott 1974, Gutiérrez-Rexach 1996, Zanuttini and Portner 2003, Rett 2011, among others), exclamations have the form of declarative sentences but carry exclamatory force via rising intonation contour, while exclamatives have specific syntactic properties such as the use of wh-expressions. Miratives have special morphology. In some languages, as in Spanish, mirativity makes use of 'fake' past: the verbal tense is in the past, but has a present interpretation.

(1) (Wow) You're tall! (2) How tall you are!

(3) a. ¡Eres   alto! b. ¡Qué alto eres!
   be.PR.2s tall   what tall be.PR.2s
   'You're tall!'   'How tall you are!'

(4) ¡Eras   alto!
   be.PAST IMPF.2s tall
   'You're tall!' (I was not expecting that)

In this poster, I look at these three ways of expressing surprise. By examining first, properties that help to identify each of them such as intonation pattern, embeddability and degree restriction, and second, contexts in which an exclamation, but not a mirative can be felicitous, I claim that the mirative is a type of assertion rather than a type of exclamation, and thus, cannot be analyzed in terms of exclamations. In a nutshell, I propose that while exclamatives and exclamations express emotive meanings (among them, surprise due to violation of speaker's expectations), miratives are assertions that include a modal component. This modal part encodes that the proposition is new information that clashes with the speaker's previous beliefs. This triggers surprise in miratives as a pragmatic consequence. I follow Gutiérrez-Rexach (1996) analysis for exclamations, and my own work (Torres 2012) for mirativity. My view on exclamations and miratives predicts that it is possible to combine a mirative with an exclamation/exclamative. For instance, we can add exclamation force to a mirative (via intonational means), or we can combine the grammar of an exclamative (wh-clause) with the grammar of a mirative ('fake' past). This is supported by data, as we see in (5). In (5) the speaker is exclaiming surprise at the hearer's height, which exceeds a certain degree, something that contradicts what the speaker had earlier believed.

(5) ¡Qué alto eras!
   what tall be.PAST IMPF.3s
   'How tall you are!'

Selected References: Gutiérrez-Rexach, J. (1996). The semantics of exclamatives. In E. Garrett & F. Lee (Eds.), *Syntax at sunset:* UCLA working papers in Linguistics. Torres Bustamante, T. (2012) Real tense and real aspect in mirativity. *Proceedings of SALT 22*

Distributivity with group terms: semantics or pragmatics?

In this poster I take a critical look at De Vries's (2012, 2013) analysis of distributivity with group nouns, presented at NELS43. I point out some problems with the analysis that can easily be fixed, namely that the analysis as is doesn't accommodate for the facts from British English Barker(1992) talks about, namely sentences in which the verb shows plural agreement with group nouns. Furthermore, I bring out a problem that is not as easy to discard, namely that De Vries's analysis, using polyadic distributivity, does not entirely account for the data she brings out. I try to account for this data using meaning postulates, and show that even this analysis encounters problems. In fact, the facts I bring out seem to indicate that the problem she addresses might not be semantic at all, but possibly entirely pragmatic.

Background information

De Vries's proposes an analysis of distributive readings that involve group terms such as *the team*, convincingly arguing, and following Barker (1992), among others, that Link's (1991) D-operator $(\lambda P.\lambda X.\forall x[x \in X \rightarrow P(x)])$ cannot access the members of the group seeing as the denotation of a group noun is not plurality but an atom. She argues that this analysis is supported by the unavailability of a distributive interpretation for sentences like those in (1) and (2).

(1) The boy team has more coins than the girl team.

≠ For every boy x, x has more coins than each of the girls.

(2) The class would be upset if John kissed their mother.

≠ For every pupil x, x would be upset if John kissed x's mother.

Furthermore, for sentences with group nouns in subject, and indefinites in object position, that do allow for a distributive reading, De Vries (2013) claims that indefinites should be analyzed as properties. The dstributive reading of (3) below is then due to the polyadic lexical distributivity.

(3) The team is wearing an orange vest. (De Vries 2013)

= There is an orange vest such that the team is wearing it. (collective interpretation)

= Each member of the team is wearing an orange vest. (distributive interpretation)

Assuming that the indefinite is a property, $<e,t>$, De Vries also assumes Chierchia's (1984) typeshift ˆ that turns predicative expressions into their entity correlates. Thus (3) is represented as (4):

(4) (wear(ˆorange vest))(the team)

and the verb *wear* is a relation between groups and entity correlates. However, (4) does not entail the distributive interpretation of (3), at least not without additional stipulations, since it is not obvious how there would be a universal quantifier scoping over the team members. I will try to explicitly state how a distributive reading of sentences like (3) is available by using meaning postulates.

Problems this analysis encounters: British English

In British English, a distributive reading is available for sentences such as (5) and (6):

(5) Real Madrid have more medals than Barcelona.   (BrE)

= For every Real Madrid player x, x has more medals than each of the Barcelona players.

(6) Liverpool would be upset if someone stole their boots.   (BrE)

= For every Liverpool player x, x would be upset if someone stole x's boots.

This should not be the case, according to De Vries. However, this set of data can easily be accommodated in her analysis if we take into account Barker's (1992) analysis of British English data where he shows that plural agreement on the verb allows the verb phrases to take noun phrases which denote sums. In cases where the verb shows plural morphology, the group noun will be interpreted as a sum, and not as an atom, therefore allowing for a distributive reading.

Polyadic distributivity issues and an alternative analysis

A more grave problem for De Vries's analysis is that fact that (4), as given, doesn't explicitly show the distributive interpretation given in (3).

However, even if we assume that the distributive interpretation is achieved with the help of a meaning postulate stating that, for all verbs, if their subject is a group term, and their object an indefinite, there is polyadic distributivity over the arguments, we will make the wrong predictions for (7):

(7) The team is holding a trophy.   (AmE)
    = There is a trophy such that all (or most) members of the team are holding it.
    = One member of the team is holding a trophy, and represents the team in doing so. (group credit)
    ≠ Individual members of the team are each holding a trophy. (distributive interpretation)

With the assumption that polyadic distributivity occurs with all predicates, there is no way to explain why (7) cannot have a distributive interpretation. The same problem persists in British English:

(8) Barcelona are manipulating a match official.   (BrE)
    = There is a match official such that all (or most) members of Barcelona are manipulating him.
    ≠ For every Barcelona player x, x is manipulating one of the four match officials.

Another route that could be taken to fix the above-mentioned problem is positing meaning postulates for individual verbs, as in (9) for *wear*:

(9) $\forall Y \forall x[\text{wear}(Y,x) \wedge \text{kind}(x) \rightarrow \forall z[\text{atom}(z) \wedge z \leq Y \rightarrow \exists w[R(w,x) \wedge P(z,w)]]$

Where Y is a group individual, and R is Carlson's (1977) 'realizes' or 'is an instance of'. I assume that instances inherit all the relevant properties of kinds (every instance of the kind *orange vest* is orange and a vest). Assuming also that indefinites are properties, and following Chung and Ladusaw's (2003) approach, namely using predicate restriction that lets us interpret the property argument as a restrictive modifier of the predicate, we get the following denotation for (3):

(10) a. $\lambda y.\lambda x[\text{wear}(x,y) \wedge \text{kind}(y)]$ ($\lambda z[\text{orange}(z) \wedge \text{vest}(z)]$) - Restrict
     b. $\lambda y.\lambda x[\text{wear}(x,y) \wedge \text{kind}(y) \wedge \text{orange}(y) \wedge \text{vest}(y)]$
     c. $\lambda x.\exists y[\text{wear}(x,y) \wedge \text{kind}(y) \wedge \text{orange}(y) \wedge \text{vest}(y)]$ (team)
     d. $\exists y[\text{wear}(\text{team},y) \wedge \text{kind}(y) \wedge \text{orange}(y) \wedge \text{vest}(y)]$
     e. $\forall z[\text{atom}(z) \wedge z \leq \text{team} \rightarrow \exists w[R(w, (\text{orange}(y) \wedge \text{vest}(y)) \wedge \text{wear}(z,w)]]$

Where the step from (10d) to (10e) involves applying (9) to (10d).

I assume that group nouns have two potential denotations, namely *{a,b,c}* and the atom *e* in this schema: [[Team]] is therefore ambiguous between [[Team]] = e; and [[Team]] = ⊕team.player. Therefore if the denotation of *team* in (3) is ⊕*{a,b,c}* in this schema, based on (9), (3) has a distributive interpretation. If the denotation of *team* is *e*, (3) has a collective interpretation, since *e* itself is the only atomic part available.
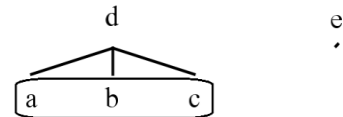
Further research problems

It could be argued that in sentences like (7), *trophy* does not represent a kind, but an instance, and therefore the step analogous to one from (10d) to (10e) is not possible. However, the problems outlined still persist, because even in contexts where it is clear that the indefinite object denotes multiple instances, it is difficult or impossible to have a distributive interpretation:

(11) *The team are wearing a medal.   (BrE)
(12) ?The team are wearing a black armband.   (BrE)

If the verb being used is not *wear*, or *eat*, this becomes even more obvious:

(13) The team are carrying an egg in a spoon.   (BrE)
     ≠ For every x, x member of the team, there is an egg and a spoon such that x
     is carrying the egg in the spoon.

It is unclear to me how polyadic distributivity over two predicates can explain the uneven distribution of availability of a distributive interpretation depending on the verb. However, as I have shown, assuming a meaning postulate for individual verbs doesn't fully account for the data either. It could possibly be said that the nature of the issue is not semantic, but pragmatic, particularly if we note the contrast between (3), (11) and (12). This is in no way a final answer, but merely an extension of the set of the questions posed.

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HOW MUCH PLURALS COUNT

ALEXIS WELLWOOD, UNIVERSITY OF MARYLAND

It is often suggested that a comparative like that in (1a) is understood as expressing a greater-than relation between measurements provided by much (i.e., more≡much-er), whereas comparatives like that in (1b) express a comparison of measurements provided by many (i.e., more is ambiguous; Bresnan 1973, Heim 1985, Hackl 2001, a.o.).

(1)   a. Al found more rock than Bill did.   *num, weight*
      b. Al found more rocks than Bill did.   *num, *weight*

I consider new data crossing the adjectival and verbal domains (eventive and stative) that suggest an alternative explanation of the pattern in (1a-b). On my account, much provides the semantics of measurement for -er in all cases; cardinal comparisons are the result of an interaction between much and the semantic effects of stacking functional morphemes on its evident argument.

The surface difference between (1a) and (1b) is the addition of the plural morpheme. Another kind of surface difference with a similar effect is that between (2a) and (2b), in the choice of preposition in versus on. Yet another kind is that between (3a) and (3b), where more appears postadjectivally as opposed to preadjectivally. Finally, there is no surface difference between (4a) and (4b) apart from the parenthetical context-setting expressions, yet, (4b) has more readings than (4a). I argue that this pattern follows without stipulation from the analysis offered for (1-3).

(2)   a. Al ran in the park more than Bill did.   *num, duration*
      b. Al ran to the park more than Bill did.   *num, *duration*

(3)   a. Al was more upset than Bill was.   *num, upset*
      b. Al was upset more than Bill was.   *num, *upset*

(4)   a. (Friday at lunch) Al worried more than Bill did.   *num, worry*
      b. (During the week) Al worried more than Bill did.   *num, worry*

I propose that much provides the semantics of measurement in all comparatives: it is interpreted as a strict structure-preserving map from the measured domain to degrees (a generalization/extension of Schwarzschild 2006), which explains the restrictions on which dimensions for measurement are possible in mass and atelic comparatives noted in (5).

(5)   a. Al ate more soup than Bill did.   *volume, *temperature, *tastiness*
      b. Al ran more than Bill did.   *distance, duration, *speed, *effort*

I analyze upset and worry as one-place predicates of states, on a par with rock and run which are predicates of stuff and process respectively (6). (This conclusion is independently motivated by facts like (7).) In (2a) and (3a), much takes V or A as an argument directly. In (2b) and (3b), much takes VP as an argument. Plural readings are triggered by the presence of the verbal plural (e.g. Ferreira 2005), and telic run to the park must be pluralized else it will not be interpretable

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with much. The stative predicate upset "becomes VP" via an "eventizer" (von Stechow 2003, cf. Kratzer 2000) that converts stative predicates to eventive ones.

(6)   a. $[\![\text{upset}]\!] = \lambda s[\text{UPSET}(s)]$

      b. $[\![\text{worry}]\!] = \lambda e[\text{WORRY}(s)]$

      c. $[\![\text{rock}]\!] = \lambda x[\text{ROCK}(x)]$

      d. $[\![\text{run}]\!] = \lambda e[\text{RUN}(e)]$

(7)   a. Al was upset three times last night.

      b. Al is more upset with Carl in the late morning on Mondays from arguments about the Sunday night football game than Bill is.

      c. Al worried every afternoon last week.

      d. Al worries about Carl in the early morning on Mondays when she doesn't see his shoes in the hallway more than Bill does.

(8)   a. $[\![\text{Ev}]\!] = \lambda P \lambda e[\exists s[P(e) \ \& \ \Theta_R(e, s)]]$

      b. $[\![\text{Pl}]\!] = \lambda P \lambda \alpha[*P(\alpha)]$

(4a-4b) show the same pattern, yet there is no overt marking of the proposed structural distinctions. Restricting our attention to a single instant, only the "degrees of worry" reading is available. Restricting our attention to a time period that can contain multiple instances of a state holding, either of the "degrees of worry" or the cardinal comparison are available. This possibility likely reflects a limitation of English verbal morphology; in a language which overtly marks the relevant distinctions, the two readings of (4b) should correspond to two minimally different strings.

Interpretive effects of Predicate Inversion: The syntax and information structure of the nominal copula in Slovenian

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This poster demonstrates how three distinct interpretive effects emerge from Predicate Inversion (Den Dikken, 2006) in the Colloquial Slovenian (CS) nominal domain. A discourse-anaphoric interpretation is available in definite contexts only, while a 'kind' reading is available in both definite and indefinite contexts. A third, contrastive, interpretation is associated with a null pronoun as the head of the inverted predicate.

The clitic *ta* in Colloquial Slovenian is copula-like functional head (or Linker) which, I have argued, signals that Predicate Inversion has applied (Wilson, to appear). This so-called "adjectival definite article," is not syntactically restricted to either adjectival or definite contexts. The peculiar distribution of the clitic is described in detail by Marušič and Žaucer (2006, 2008, 2010), and confirmed by my informants for the examples below. TA cannot appear in an unmodified noun phrase (1a), and it is optional in definite DPs when an adjective is present (1b). It can appear in indefinite contexts (1c) and often is inserted following a definite demonstrative or pronoun (1d). The modifier that TA is associated with may be a prepositional phrase (2) or (marginally) a full relative clause.

(1) a. (*ta) avto   b. (ta) nov avto   c. en (ta) nov avto   d. moj/tist (ta) nov avto

   TA car   TA new car   a TA new car   my/that TA new car

(2)   una *(ta) za pred   hišo pometat   metla
       that TA for in.front.of house sweep.inf broom
       'that broom for sweeping in front of the house'

The analysis of TA as a Linker explains this syntactic distribution as well as the range of interpretations given to constructions in which it occurs, both contrastive and non-contrastive.

The non-contrastive TA-constructions are derived from configuration in which the modifier is initially merged as the predicate-complement of a Relator head, and the NP subject as the specifier. The Linker is then merged, extending the phase and providing a position for the predicate to move into above the subject.

(3) [$_{NumP}$ *en* [$_{LP}$ [$_{AP=Pred}$ *nov*] R+L=*ta* [$_{RP}$ [$_{NP=Subj}$ *avto*] <R> <AP>]]

(The surface word order, with TA to the left of the modifier, is predicted based on the distribution of clitics in Slovenian). Inversion of the predicate *nov* ('new') around its NP subject marks it as old information. This is felicitous if 'new cars' were previously mentioned (the discourse-anaphoric reading), but the DP will always be definite in such a context. In the absence of a direct antecedent, the presupposition that the 'new' quality in question is known to the speaker and the hearer vis-à-vis 'cars' can only be satisfied by the existence of a salient type or class of new cars (the 'kind' reading).

Following the intuition of Marusic & Zaucer (2006), I hypothesize that a null pronoun introduces an alternative set in **the contrastive TA-constructions**. This is deduced from the behavior of non-predicative adjectives such as *bivši* ('former'), which can only participate in contrastive TA-constructions. 'Non-predicative' here refers to the fact that these adjectives cannot be the predicates of copular sentences, which means that they cannot be merged as the AP predicate in the complement of a Relator head as in (3). But the contrastive constructions also have reversed information structure: the phrases cannot receive new information focus but must instead be interpreted as topics. I take these facts together as pointing to the structure in (4) in which the overt AP is modifying a null pronoun. This modified NP (labeled FP here) is predicated of the overt NP in the complement position of a Relator phrase. Predicate Inversion is triggered in these cases by the need for this silent pronoun to be licensed in a derived specifier position.

(4) [$_{DP}$ *moj* … [$_{LP}$ [$_{FP=Pred}$ *nov* F [$_{NP}$ ONE]] R+L=*ta* [$_{RP}$ [$_{NP=Subj}$ *avto*] <R> <FP>]]

Once inversion has applied, the phrase must be interpreted with reversed information-structure.

This analysis of TA-constructions in Colloquial Slovenian illuminates the range of contributions that the syntactic operation of Predicate Inversion can make to the interpretation of phrases and sentences in which it has applied. Space permitting, I will also discuss the interaction of the nominal copula with possessive adjectives and deictic demonstratives in CS: an area of investigation which also has interesting implications for the mapping between syntax and meaning.

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Approximately vs. *about*: epistemic possibility in approximation

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Sauerland and Stateva (2007) compare the approximators *about* and *approximately* and suggest that *about* occurs in a particular subset of the contexts compatible with *approximately*. Here I highlight two complications for the analysis they put forth: a) *about* is infelicitous in *approximately*-felicitous contexts that imply speaker certainty, and b) *about* is felicitous with select maximum-standard absolute gradable adjectives. To account for these, I propose a) that *about* has an epistemic possibility component, and b) when *about* appears with a maximum-standard adjective, it is actually an instance of the directional modifier *just about*.

Previous analysis Sauerland and Stateva (2007) claim that the approximator *approximately* can only combine with non-endpoint expressions (*approximately three/#dry*), and the approximator *about* is restricted to a subset of non-endpoint expressions, specifically, numerals and temporal expressions.

This characterization of *about*, however, seems simultaneously not restrictive enough and too restrictive. First, not all numerals and temporal expressions are felicitous with *about*, demonstrated by expressions like *?It's about 2010*, which many speakers find marked. Second, not all endpoint expressions are infelicitous with *about*; notably, many maximum-standard gradable adjectives are felicitous (e.g. *about empty*).

Epistemic content To begin to account for the data above, I propose that *about* and *approximately* differ in that only *about* directly expresses that the uttered numeral is epistemically possible, implicating lack of speaker certainty. The utterance *It's about 2010* sounds strange, then, because speakers are generally assumed to know what year it is. As expected in this new analysis, felicity of *about* improves when the context supports speaker uncertainty. For example, if the speaker had been in a coma for several years, his utterance of *It's about 2010* is less marked.

Additional support for assigning an epistemic component to *about* can be seen in its interaction with epistemic predicates like *might* and *seem*. With these predicates, *about* (but not near-synonym *approximately*) gives rise to modal concord readings.

(Just) about To account for the felicity of *about dry*, I propose that this contains an instance of directional *just about* with a covert *just*, not approximative *about*. Note that when *about* modifies a maximum-standard adjective, it behaves similar to other directional modifier (*just about*, *almost*, *nearly*, etc.): following Nouwen (2006), it has a polar component (*(just) about full → not full*), but this polar component is not prominent.

Conclusion Here we have glimpsed Sauerland and Stateva (2007)'s take on *approximately* and *about*, as well as some ostensible problems. While I maintain that approximative *about* occurs in a subset of contexts allowed by *approximately*, the presence of an epistemic component requires some revamping of their proposed licit contexts and denotation for *about* (which, like their *approximately*, simply adjusts scale granularity, $[\![\textbf{about D}]\!]^{\text{gran}} = \text{coarsest(gran)}([\![\textbf{D}]\!])$).

Interestingly, this epistemic *about* parallels Geurts and Nouwen (2007)'s analysis of *at most*: both assert that the expressed numeral is possible, but (unlike assertions) neither seems to allow direct denial of this content. Neither *It's about 2010* nor *It's at least* is particularly felicitous, but neither can be directly denied (*You're wrong, you know it's not 2010* vs. *Hey, wait a minute, don't you know what year it is?*). And while this epistemic content does not show pure at-issue behavior, it does not exhibit the projection behavior of presuppositions or CIs. This behavior, however, appears general to epistemic expressions (*It might be 2010* shows the same deniability pattern), affirming the proposed epistemic content in *about* and *at most*.

<center>A rate analysis of binominal *each*</center>

<center>Linmin Zhang, NYU // 2013 MACSIM</center>

Apart from apparent semantic similarities between adverbial *each* sentences and binominal *each* sentences, binominal *each* sentences have many special properties both in syntax and in semantics. In this poster, I would like to 1) show some syntactic and semantic properties of binominal *each* sentences, 2) argue that the existing distributivity analysis (e.g. Balusu 2005, Champollion, 2011) applicable for adverbial *each* sentences is not applicable for binominal *each* sentences, and 3) propose that an analogy can be drawn between binominal *each* constructions and such speed constructions as "200 km/h" and adopt a rate analysis to account for these constructions in a unified way.

As the contrast in (1) shows, the most prominent property of the binominal use of *each* is the counting quantifier requirement (see Szabolcsi 2010, Ch.8.4).

(1a) The boys saw {**one** / **three** / *the / *a / *every / *- / *no / *cute} monkey(s) each.

(1b) The boys each saw {one / three / the / a / every / no / cute} monkey(s).

Actually, even the counting quantifier requirement is not sufficient. Suppose there is a scenario: a cook was baking hams and used thermometers to read the temperature of hams. The contrast in (2) shows that only monotonic measure functions are compatible with the binominal use of *each*.

(2a) The hams weighed 20 pounds each.

(2b) *The hams read 350 degrees each. (cf. The hams each read 350 degrees.)

Another related fact is that as the examples (3a) and (3b) show, both the cardinal reading and the individual reading are available for adverbial *each* sentences, while only the cardinal reading is available for binominal *each* sentences.

(3a) John and Mary should each invite 2 celebrities.

cardinal reading: the number of celebrities that J should invite is 2, and the number for M is also 2.

individual reading: there are 2 celebrities that J should invite, and there are also 2 for M.

(3b) J and M should invite 2 celebrities each. cardinal reading: $\sqrt{}$; individual reading: $\times$.

Obviously, all these facts show that there are indeed syntactic and semantic differences between the binominal use of *each* and the adverbial use of *each*. The differences imply that an account good for the adverbial use of *each* might not be equally applicable for the binominal use of *each*.

Balusu 2005 and Champollion 2011 adopted a distributivity analysis to account for the reduplicated number construction in Telugu and the adverbial use of *each* in English respectively. The basic idea of the distributivity analysis is to view an event as a sum of the subevents and the subevents are defined on the atomicity of a certain thematic role. If a similar analysis could be extended to account for the binominal use of *each*, then we would need some very unnatural stipulations to block the individual reading as well as quantifier phrases other than counting quantifier phrases of a monotonic measure function.

However, if we compare binominal *each* sentences and speed constructions (such as (4)), then we can see some striking coincidences: all the generalizations with regard to special properties of binominal *each* sentences also fit speed constructions.

(4) The car goes 200 km per hour.

The common point between both binominal *each* constructions and speed constructions is that in both cases, there is a rate expression telling the proportional relationship between two monotonic measure functions with regard to a same event. Both *each* (which means *one X*) and *per hour* (which means *one hour*) can be considered as the denominator, and *3 monkeys* and *200km* the numerator. The whole construction can be taken as a property of an event, and it modifies the event by expressing a non-monotonic measure function of the event.

Here is a compositional analysis of a binominal *each* sentence: The boys saw 3 monkeys each.

LF: $[_{(ix)} \exists [_{(viii)}$ the boys $[_{(vii)}$ [ag] $[_{(vi)} [_{(v)}$ see $[_{(iv)}$ [th] monkeys]] $[_{(iii)} 3 [_{(ii)} u_{th} [_{(i)}$ each $u_{ag}]]]]]]]$

$[[u_{ag}]]_{<vn>} = \lambda e_{<v>}|{*}ag(e)|$

$[[u_{th}]]_{<vn>} = \lambda e_{<v>}|{*}th(e)|$

$[[\text{each}]]_{<vn,<vn,<n,vt>>>} = \lambda u_{ag<vn>}\lambda u_{th<vn>}\lambda n_{<n>}\lambda e_{<v>}[u_{th}(e)/u_{ag}(e) = n]$

(i) function application result: $\lambda u_{th<vn>}\lambda n_{<n>}\lambda e_{<v>}[u_{th}(e)/|{*}ag(e)| = n]$

(ii) function application result: $\lambda n_{<n>}\lambda e_{<v>}[|{*}th(e)|/|{*}ag(e)| = n]$

(iii) function application result: $\lambda e_{<v>}[|{*}th(e)|/|{*}ag(e)| = 3]$

$[[\text{monkeys}]]_{<et>} = \lambda x[{*}monkey(x)]$

$[[[th]]]_{<ve>} = \lambda e_{<v>}[{*}th(e)]$

Type shifter: $\lambda \theta_{<ve>}\lambda P_{<et>}\lambda V_{<vt>}\lambda e_{<v>}[P(\theta(e)) \wedge V(e)]$

(iv) type shifting result: $\lambda V_{<vt>}\lambda e_{<v>}[{*}monkey({*}th(e)) \wedge V(e)]$

$[[\text{see}]]_{<vt>} = \lambda e[{*}see(e)]$

(v) function application result: $\lambda e_{<v>}[{*}monkey({*}th(e)) \wedge {*}see(e)]$

(vi) predicate modification result: $\lambda e_{<v>}[{*}see(e) \wedge {*}monkey({*}th(e)) \wedge [|{*}th(e)|/|{*}ag(e)| = 3]$

Type shifter: $\lambda \theta_{<ve>}\lambda V_{<vt>}\lambda x_{<e>}\lambda e_{<v>}[\theta(e) = x \wedge V(e)]$

$[[[ag]]]_{<ve>} = \lambda e_{<v>}[{*}ag(e)]$

(vii) type shifting result:

$\lambda x_{<e>}\lambda e_{<v>}[{*}ag(e) = x \wedge {*}see(e) \wedge {*}monkey({*}th(e)) \wedge [|{*}th(e)|/|{*}ag(e)| = 3]$

$[[\text{the boys}]]_{<e>} = \oplus boy$

(viii) function application result:

$\lambda e_{<v>}[{*}ag(e) = \oplus boy \wedge {*}see(e) \wedge {*}monkey({*}th(e)) \wedge [|{*}th(e)|/|{*}ag(e)| = 3]$

(ix) existential closure result:

$\exists e_{<v>}[{*}ag(e) = \oplus boy \wedge {*}see(e) \wedge {*}monkey({*}th(e)) \wedge [|{*}th(e)|/|{*}ag(e)| = 3]$

Moreover, there are at least two presuppositions not included in this derivation.

The first presupposition is the monotonicity requirement: the measure functions in the dimension of agent and in the dimension of theme are monotonic.

The second presupposition is the homogeneity assumption, which guarantees that the property $|{*}th(e)|//|{*}ag(e)| = 3$ holds homogeneously through all parts of the event e. Here is the formal expression of this assumption: for any $x_1, x_2 \leq {*}ag(e) = \oplus boy$, define e_1 as $\oplus\{e'|{*}ag(e')\leq x_1\}$, e_2 as $\oplus\{e'|{*}ag(e')\leq x_2\}$, then $|{*}th(e_1)|/|{*}ag(e_1)| = |{*}th(e_2)|/|{*}ag(e_2)|$.

Not only this rate analysis can account for the (monotonic) counting quantifier requirement and the unavailability of individual readings in the binominal use of *each*, but also it predicts other interesting facts.

For example, the rate construction in (5a) and the distributivity construction in (5b) cause the two sentences to behave differently when there is a sentence modifier *on average*:

(5a) On average, the boys saw three monkeys each.

[[the boys saw three monkeys each]] =

$\exists e[{*}see(e) \wedge {*}ag(e) = \oplus boy \wedge {*}monkey({*}th(e)) \wedge |{*}th(e)|/|{*}ag(e)| = 3]$

(5b) ?? On average, the boys each saw three monkeys.

[[the boys each saw three monkeys]] =

$\exists e[{*}ag(e) = \oplus boy \wedge e = \oplus\{e'|atom(ag(e')) \wedge {*}see(e') \wedge |{*}monkey({*}th(e'))| = 3\}]$

Presumably, in (5a), *on average* modifies the property $|{*}th(e)|//|{*}ag(e)| = 3$, while in (5b), *3* is a property which tells the amount of themes in each subevent, thus *3* is too embedded to be modified by the sentence level modifier *on average*, and since there is no other number property for the sentence modifier *on average* to modify, *on average* cannot be compatible with this adverbial *each* sentence.

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