Table des matières

**Préface** .................................................................................................................... 5

**Comité scientifique** .................................................................................................. 6

**Exposés invités**

- The Semantics of Russian Genitive of Measure and Container Constructions
  
  *Barbara Partee, Vladimir Borschev* ........................................................................ 7

- Binding without Identity : reference by proxy and the functional semantics of pronouns
  
  *Yoad Winter* ........................................................................................................... 8

- Inquisitive Semantics
  
  *Jeroen Groenendijk* ................................................................................................ 11

**Communications**

- Analytic Tableaus for Natural Logic
  
  *Reinhard Muskens* ................................................................................................. 12

- Unifying the Semantics for “Thematic” and “Classificatory” Uses of Ethnic Adjectives
  
  *Boban Arsenijević, Gemma Bolela, Berit Gehrke, Louise McNally* ...................... 15

- An Analysis of Inferential Evidentials as Dimensional Shifts
  
  *Thomas Gamerschlag, Wiebke Petersen* ................................................................ 17

- Coercion and Anaphoric Use of Mandarin Classifiers
  
  *Laurent Prévet, ShuKai Hsieh* ................................................................................. 20

- The Meaning of the French Additive ‘Aussi’ : Presupposition and Discourse Similarity
  
  *Grégoire Winterstein* .............................................................................................. 23

- Anaphoric Adverbials – a Discourse Analysis of Asserted and Presupposed Adverbial Clauses
  
  *Mailin Antomo* ....................................................................................................... 26

- Triggering Verbal Presuppositions
  
  *Marta Abrusan* ........................................................................................................ 29

- Rhetorical Relations and Predicate Terms
  
  *Palle Leth* ................................................................................................................ 31

- On the Compositionality of Temporal Locating Adverbial Modification
  
  *Laure Vieu, Myriam Bras, Laurent Prévet* ............................................................... 34

- Calculating The Epistemic Effect of Past Modality via K
  
  *Alda Mari, Susan Schweitzer* ................................................................................ 37

- ‘Descriptive’ Indexicals
  
  *Julie Hunter* ............................................................................................................. 40

- Imperfectivity and Habituality in Italian
  
  *Fabio Del Prete* ...................................................................................................... 43

- French Modals and Perfective Aspect : A Case of Aspectual Coercion
  
  *Vincent Homer* ...................................................................................................... 46

- Prosody and Quantifier Float
  
  *Kenji Yokota* ......................................................................................................... 49
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do Elided Constituents really Exist in Unembedded Quantifiers?</td>
<td>Yukio Furukawa</td>
<td>52</td>
</tr>
<tr>
<td>Exclamatives Have a Question Semantics!</td>
<td>Anna Chernilovskaya</td>
<td>55</td>
</tr>
<tr>
<td>The Challenge of Argumentative Discourse : Integrating Revision Updates in a Text Grammar Formalism</td>
<td>Noor van Leusen</td>
<td>58</td>
</tr>
<tr>
<td>Sources of Expectation in Concession</td>
<td>Livio Robaldo, Elen Mitsakaki, Alessia Bianchini</td>
<td>61</td>
</tr>
<tr>
<td>Du rôle de la sous-spécification dans les interactions verbales pathologiques (formalisation à base de SDRT)</td>
<td>Manuel Rebuschi, Michel Musiol</td>
<td>64</td>
</tr>
<tr>
<td>The Acquisition of Scalar Implicature</td>
<td>Stefanie Röhrig</td>
<td>67</td>
</tr>
<tr>
<td>Index des auteurs</td>
<td></td>
<td>71</td>
</tr>
</tbody>
</table>
Préface

Les Journées Sémantique et Modélisation (Conference on Semantics and Formal Modelling) en sont à leur huitième édition. Le but de cette série de manifestations, initiée par le GDR CNRS “Sémantique et modélisation” dirigé par Francis Corblin, est de promouvoir les recherches concernant la formalisation du sens et de l’interprétation linguistiques, et d’encourager les interactions entre la linguistique, la logique, les mathématiques et l’informatique.

Ce volume contient le texte de 20 résumés sélectionnés sur 52 soumissions. Il inclut également les résumés d’exposés invités.

Nous remercions toutes les personnes qui ont rendu cet événement possible : le comité scientifique, les conférenciers invités, les conférenciers, et toutes les personnes qui ont participé à l’organisation de ces Journées.

Nous remercions également les organisations qui ont soutenu les JSM’10 : l’INRIA Nancy–Grand Est, le LORIA (Laboratoire Lorrain de Recherche en Informatique et ses Applications), Nancy Université, l’ATALA (Association pour le Traitement Automatique des Langues), la Région Lorraine, le master TAL Erasmus Mundus de Nancy 2, et le GDR CNRS “Sémantique et Modélisation” dirigé par Francis Corblin.

This is now the 8th Conference on Semantics and Formal Modelling (Journées Sémantique et Modélisation). The aim of this series of events, initiated by the GDR CNRS “Sémantique et Modélisation” lead by Francis Corblin, is to promote research on the formalization of linguistic meaning and interpretation with the help of formal models, and to encourage interaction between linguistics, logic, mathematics and computer science.

This volume contains the text of 20 abstracts selected out of 52 submissions. It also includes the abstracts of the invited talks.

We are grateful to all the people who made this event possible : the scientific committee, the invited speakers, the contributors, and the people who were involved in organizing this conference.

We would also like to express our gratitude to the following organizations for supporting JSM’10 : the INRIA Nancy–Grand Est, the LORIA (Laboratoire Lorrain de Recherche en Informatique et ses Applications), Nancy Université, the ATALA (Association pour le Traitement Automatique des Langues—french association for natural language processing), the Lorraine Region, the Erasmus Mundus NLP master of Nancy 2, and the GDR CNRS “Sémantique et Modélisation” lead by Francis Corblin.

Sylvain Pogodalla
Pascal Amsili
Comité scientifique

Sylvain Pogodalla, LORIA/INRIA Nancy - Grand Est
Pascal Amsili, Paris Diderot, LLF
Maxime Amblard, Nancy 2, LORIA
Nicholas Asher, CNRS, IRIT
Claire Beyssade, CNRS, IJN
Patrick Blackburn, INRIA, LORIA
Olivier Bonami, Paris 4, LLF
Myriam Bras, Toulouse 2, CLLE-ERSS
Joan Busquets, Bordeaux 2, CLLE-ERSS
Patrick Caudal, CNRS, LLF
Ileana Comorovski, Nancy 2, ATILF
Bridget Copley, CNRS, SFL
Francis Corblin, Paris IV, IJN
Évelyne Jacquey, CNRS, ATILF
Brenda Laca, Paris 8, SFL
Alain Lecomte, Paris 8, SFL
Jena-Marie Marandin, CNRS, LLF
Alda Mari, CNRS, IJN

Ora Matushansky, CNRS, SFL & UiL OTS/Université d’Utrecht
Philippe Muller, Toulouse 3, IRIT
David Nicolas, IJN, ENS-EHESS-CNRS
Christopher Piñón, Lille 3, STL
Laurent Prévot, Aix-Marseille 1, LPL
Christian Retoré, Université de Bordeaux, LABRI
Laurent Roussarie, Paris 8, SFL
Gabriel Sandu, CNRS, IHPST
Philippe Schlenker, CNRS, IJN, NYU
Benjamin Spector, CNRS, IJN
Lucia Tovena, Paris VII, LLF
Fabienne Venant, Nancy 2, LORIA
Laure Vieu, CNRS, IRIT & CNR-ISTC-LOA Trento
Barbara Partee, University of Massachusetts
Jeroen Groenendijk, University of Amsterdam & ILLC
Yoad Winter, Utrecht University
The Semantics of Russian Genitive of Measure
and Container Constructions

Barbara H. Partee
Univ. of Massachusetts, Amherst and Russian State Univ. for the Humanities, Moscow

Vladimir Borschev
VINITI - Russian Academy of Sciences, and University of Massachusetts, Amherst

Abstract:

There is a distinction between sortal and relational nouns, but nouns can be coerced to cross the border, and some nouns like teacher have robust meanings of both kinds. The line between relational and functional nouns is even less sharp, and one can question the robustness of the separate category of functional nouns.

But there are some constructions specific to functional nouns. We first briefly describe two interesting “minor” constructions: (i) parameter-headed NPs as modifiers in English, as in a dress that length (Partee 1986), and (ii) a construction in Russian known as “genitive with obligatory third term” (Borschev and Knorina 1990), similar to English person of medium height, *person of height.

The main topic of the talk is a third family of constructions in Russian involving container nouns, commonly known as the “genitive of measure” construction(s), illustrated by stakan moloka ‘glass of milk’, involving a quantity of substance contained in a container, earlier studied in (Borschev and Partee 2001, 2004). Stakan moloka may refer to the quantity of milk or to both the milk and the glass (Pustejovsky’s “dotted type”); stakan has also developed a measure reading analogous to litr ‘liter’, and some readings in between the concrete container reading and the measure reading. We investigate the semantics and ontology of the different readings of such functional “container-nouns” and the constructions they occur in. On our current analysis, building on work of Landman and Rothstein, the role of the function-noun ends up being quite different in these different constructions. We include some observations on the relation between linguistic and non-linguistic aspects of the “natural language metaphysics of containers”.

Borschev, V.B., and Knorina, L.V. 1990. Tipy realij i ix jazykovoe vosprijatie [Types of entities and their perception in language]. In Language of Logic and Logic of Language, ed. V.V. Ivanov, 106-134. Moscow: Akademija Nauk SSSR.


http://people.umass.edu/partee/docs/genitive_modifiers.pdf


Binding without Identity: reference by proxy and the functional semantics of pronouns

Yoad Winter (Utrecht University)
Joint work with Eric Reuland

One of the well-known properties of reflexive pronouns is their ability to have “proxy” interpretations. The following example, from Jackendoff (1992), illustrates this possibility.

(1) (Upon a visit in a wax museum:) All of a sudden Ringo started undressing himself.

As usual, the pronoun himself in (1) can be interpreted as equal to the subject’s denotation, in what we call strict binding. However, the pronoun can also refer to a statue of the person Ringo that is denoted by the subject. Such proxy binding can appear with all pronouns, not only with reflexives. In this talk I will explore the implications of proxy anaphora for the combinatorics of anaphora and the semantics of the reflexivizing element self/zel in English and Dutch.

Basing ourselves on Jacobson’s (1999) variable-free semantics, Reuland and I propose the following principles:

(i) The context specifies a reflexive proxy relation that defines possible “proxies” for all entities referred to in a linguistic utterance.

(ii) Pronouns denote Skolem functions that take such proxy relations as their argument.

(iii) Elements like self/zelf are ordinary relational nouns, and their only special property is morpho-syntactic, rather than semantic: their ability to compose with simple pronouns into complex “reflexive pronouns” like himself.

We show that these assumptions mesh well with the syntactic conditions on locally bound versus exempt reflexive pronouns, and the observed absence of the proxy reading (1) with SE-anaphors such as Dutch zich (Reuland 2001).

As Jackendoff argues, proxy interpretations of reflexives as in (1) is very likely to be related to a general property of reference in language: the ability to refer to various “proxies” of any given individual concept. In this respect, the reflexive in (1) is not different from non-anaphoric NPs, which can also refer to “non-canonical” proxies (cf. “Ringo/the man is made of stone, whereas Yoko/the woman is made of wax”). We argue for the following generalization.

(2) Generalization: The range of available proxies for a bound pronoun is the same range of proxies as for its antecedent.

Thus, while strict identity between the referents of a pronoun and its antecedent is not mandatory even under binding, identity of the candidate proxy referents for the two expressions is mandatory. This generalization has an empirical consequence (cf. Safir 2004): also non-reflexive bound pronouns allow a proxy interpretation. For instance:

(3) All of a sudden, every pop icon started taking off the shirt he was wearing.

In the wax-museum context of (1), sentence (3) has a bound reading where the pop icons took the shirts off their respective statues. To capture this effect, we propose that the context provides a reflexive proxy relation PR, describing the possible proxies λx.PR(x,y) of any entity x referred to. The reflexivity of PR generates the standard, strict binding, interpretation of the pronoun as a limiting case. In (3) we assume that non-reflexive pronouns like he, instead of simply denoting the identity function on entities, as in Jacobson (1999), denote a Skolem function: a function from entities to entities that takes a relation as a parameter. This
parameter determines the range of possible "proxies" for each entity argument of the function. Formally:

A function \( f \) of type \( (e,e) \) with a relational parameter \( PR \) is a **Skolem function** if for every entity \( x \): \( PR(x, f_{PR}(x)) \) holds.

Note that when \( PR \) is assumed to be a reflexive relation, one of the Skolem functions \( f_{PR} \) is Jacobson's identity function. Sentence (3) is now analyzed as in (3'):

\[
(3') \forall x \left[ \text{pop_icon}(x) \rightarrow \text{take_off}(x, \text{the_shirt} \_ f_{PR}(x) \_ \text{was_wearing}) \right]
\]

Thus, for every pop icon \( x \), the Skolem function \( f_{PR} \) picks up one of \( x \)'s proxies, possibly \( x \) itself. Derivation of this analysis is straightforward within Jacobson's framework. Which Skolem function is used in (3') among the possible functions from entities to entities may be a pragmatic matter (Kratzer 1998).

What do these considerations about the meaning of pronouns in general imply for reflexive pronouns? Our answer is based on decomposing the meaning of reflexives like English *himself* or Dutch *zichzelf*. First, we treat *self* (*zelf*) as a relational noun, denoting a proxy relation. This requirement amounts to assuming that *self* denotes a reflexive relation: an entity \( x \) can have more than one "self" in addition to \( x \). For instance, a noun phrase like *Ringo's better self* is not substantially different from any other NP with a relational noun (e.g. *Ringo's better parent*), where the former NP may refer to one of Ringo's "better" proxies in the context of utterance. Also similarly to other relational nouns, *self* can semantically incorporate (Van Geenhoven and McNally 2005) with nominalized transitive verbs. For instance:

\[
(4) \quad \text{self-hater} \text{ denotes the predicate } \lambda x.\text{hate}(x, \uparrow \text{self}(x)) \quad (x \text{ is a self-hater if } x \text{ hates the property coupled with } x \text{'s proxies})
\]

\[
\text{parent-hater} \text{ denotes the predicate } \lambda x.\text{hate}(x, \uparrow \text{parent}(x)) \quad (x \text{ is a parent-hater if } x \text{ hates the property coupled with } x \text{'s parents})
\]

The only substantial difference we assume between *self* and other relational nouns is morphosyntactic. The noun *self* is able to combine with Skolem functions denoted by non-reflexive pronouns independently of genitive case (viz. *his self/himself* vs. *his parent/*his parent). We assume two ways in which this can occur:

**i. The unmarked option** – the noun *self* composes with the Skolem function through the binding mechanism. The noun *self* is covertly attached to the transitive predicate (as happens overtly in *self-hater*) and contributes a proxy relation to the non-reflexive pronoun through Jacobson’s Z function in its “proxied” version: \( Z^{PR} = \lambda R.\lambda f.\lambda x. R(x,f_{PR}(x)) \). In this version of the Z function, it provides the Skolem function \( f \) with its parameter. The denotation of a VP like *undress himself* in (1) is obtained using the structure self-*undress him*, analyzed as follows:

\[
Z^{self}(undress)(him) = Z^{self}(undress)(f) = \lambda x. \text{undress}(x,f_{self}(x)) = \lambda x. x \text{ undressed one of } x \text{'s self proxies (by definition of } f_{self} \text{ as a Skolem function)}
\]

**ii. A marked option** – the noun *self* composes with the Skolem function directly. We assume that this marked option can only occur in exempt positions (Pollard & Sag 1992, Reuland 2001), when incorporation with the predicate is syntactically blocked, e.g. *Max boasted that the queen invited [Lucie and himself] for a drink*. When formation of *self-V* is syntactically disallowed – in this case, because of the Coordinate Structure Constraint (Reuland 2001) – direct composition with the Skolem function leads to the analysis:

\( \text{himself} = f_{self} = \text{a function mapping every entity } x \text{ to one of its proxies in } \text{self}(x) \).
Unlike the unmarked option, now there is no binding that is made necessary by self’s composition. As a result, the exempt reading of himself allows it to be interpreted as either bound or free, similarly to the non-reflexive pronoun him.

In Dutch, there is a critical difference between the SE-anaphor zich and the reflexive pronoun zichzelf. In (5a) below, the anaphor zich does not allow a proxy reading. By contrast, in (5b), the reflexive pronoun zichzelf, like its English correlate, allows proxy binding.

(5) a. Jan waste zich. (“Jan washed” – only strict binding; no proxy binding)
    b. Jan waste zichzelf. (“Jan washed himself” – proxy binding possible).

We follow Reuland’s (2001) syntactic account of this contrast, assuming that bare zich forms one syntactic object (a chain) with the subject. Thus, our analysis of the intransitive usage of waste (“washed”) in (5a) interprets the chain \([Jan, zich]\) as \(f_{\text{waste}}(\text{Jan}) = \) one of Jan’s proxies. This interpretation is indistinguishable from the “simple” denotation \(\text{Jan}\) of the name Jan, given the generalization in (2) that any referential NP can be interpreted as any member of the relative set of proxies. By contrast, in (5b), similarly to (1), the reflexive pronoun fills in a separate (object) argument position of a transitive verb (here, the transitive reading of waste).

As a result, the analysis of (5b) is similar to the binding with the English sentence Jan washed himself.

**Summary:** By assuming a contextually-triggered relation, which allows more referential freedom to pronouns and “R-expressions” alike, we account for “proxy” readings of reflexive and non-reflexive pronouns in Jacobson’s variable-free framework. Pronouns in this approach denote Skolem functions, which take the “proxy relation” as their parameter. Reflexive pronouns are treated as compound elements, made of a non-reflexive pronoun and a relational noun self. This decompositional semantics accounts for both reflexives’ bound readings and their exceptional “exempt” readings. The unavailability of proxy readings with SE-anaphors is accounted for as a result of directly composing the Skolem function with its antecedent, without applying standard binding operators at all.

**References**


Inquisitive Semantics

Jeroen Groenendijk
University of Amsterdam & ILLC
Analytic Tableaus for Natural Logic

Reinhard Muskens

The Fregean revolution in logic, which turned the subject into the thriving theory it is today, also resulted in a move away from language. Frege thought ordinary language too vague and imprecise to be amenable to scientific treatment. This was a break with views held previously: in traditional logic Latin and other languages, only slightly regimented, had always been the main vehicle of representation.

A new convergence between logic and language had to await the work of Richard Montague, who showed how essentially Fregean methods can be used to treat fragments of English in a precise way. But the paradigmatic PTQ paper gives no calculus that works directly on the language itself and requires translation of English into a logical language. Proofs are available only indirectly, via this translation. This contrasts with the situation in logic, where it is customary to provide logics with their own calculus. If there truly is no important difference between natural languages and logical languages, as Montague famously or infamously wrote, it should be possible to find a calculus for the entailment relation in ordinary language that uses only linguistic forms and employs only rules that are linguistically relevant. Finding such a logic also seems highly urgent from a cognitive point of view, for, while people obviously engage in reasoning, some of it slow and conscious, some fast and subconscious, it is unlikely that the forms we encounter in standard logic have any cognitive or linguistic significance.

Calculi for the entailment relation in natural language that are based on linguistic representations are studied in Natural Logic, the continuation of traditional logic with modern means, and this paper will fall within this line of research. We will subscribe to one of the leading ideas often accepted in the natural logic tradition: that in a linguistic context some forms of inference are more natural than others. In particular it seems that reasoning on the basis of monotonicity and related algebraic concepts is deeply entrenched within the logical-linguistic system. Such forms of reasoning tend to come easy to language users and often correlate strongly with judgments on syntactic well-formedness. The best known example of such a correlation is Ladusaw’s (1979) observation that negative polarity items need licensing by a downward entailling context, but since Ladusaw’s early work a host of similar observations have strengthened the general point.

The aim of this paper will be to explore a tableau (or ‘truth tree’) system for natural language that works directly with lambda terms that do not contain any logical constants. Such lambda terms, I will argue, can very well stand proxy for linguistic representations, as they are close to the linguist’s Logical Forms, essentially trees with gaps and binding. I will argue that the methods employed in this paper scale up to much larger parts of the language than those that can reasonably be treated here.

An example of a tableau deduction according to our system, showing that most students who Mary kissed moved follows from each person who Mary touched ran, is given in Table 1. The tableau entries are each of the form $Tc : A$ or $Fc : A$, where $A$ is a Lambda Logical Form and $c$ is a sequence of constants such that $A c$ is

---

1The research line this paper is based upon starts with Van Eijck (1985), van Benthem (1986, 1991), and Sánchez (1991).
Table 1: Example of a natural logic tableau.

of type $t$. $T\vec{a}:A$ ($F\vec{a}:A$) means that $A\vec{a}$ is true (false). In particular, the tableau investigates the possibility that $\text{each}(\lambda x.\text{Mary}(\text{touched } x))\text{person}$ ran is true in some world $i$ while $\text{most}(\lambda x.\text{Mary}(\text{kissed } x))\text{student}$ moved is false in $i$. The reasoning—which refutes that possibility—makes use of monotonicity rules such as the following.

$$(1)\quad \begin{align*}
T\vec{a} :& \quad GA \\
F\vec{a} :& \quad HB \\
T\vec{c} :& \quad A \\
F\vec{c} :& \quad B \\
T\vec{b} :& \quad G \\
F\vec{b} :& \quad H
\end{align*}$$

where $\vec{b}$ and $\vec{a}$ are fresh, provided $G$ or $H$ is $\text{mon}^\uparrow$.

This rule is sound if $G$ or $H$ is upward monotone. It is used twice in the tableau, once using the fact that $\text{each }N\text{ is mon}^\uparrow$ for any $N$, and once using the upward monotonicity of $\text{Mary}$. A dual rule, for downward monotone operators, can also easily be formulated, and is used in the tableau on the basis of the downward monotonicity of $\text{each}$. The tableau also uses some propositional rules (with $\text{who}$ acting as a conjunction). Closure of branches is obtained by outright contradictions here, but also with the help of basic hyponomy relations, such as $\text{kissed} \leq \text{touched}$, or $\text{each} \leq \text{most}$.

The paper will investigate a host of other rules, many connected with properties that have arisen in the semantic literature (such as anti-additivity). It will also be argued that the formal system presented here squares well with the psychological view that reasoning is crucially dependent on systematic search for verifying situations (see e.g. Johnson-Laird, 1983, 2006, and the many references therein).

References

Unifying the semantics for “thematic” and “classificatory” uses of ethnic adjectives

1Boban Arsenijević, 2Gemma Boleda, 1Berit Gehrke, 1Louise McNally
1Universitat Pompeu Fabra, 2Universitat Politècnica de Catalunya

Ethnic adjectives (EAs) such as French have been attributed two distinct uses: a “thematic” use, typical with nominalizations ((1a)), and a “classificatory” use ((1b)), most obviously found with nonderived nominals though also possible with nominalizations (see e.g. Kayne 1984, Bosque & Picallo 1996, Fábregas 2007, Alexiadou & Stavrou, to appear).

(1) a. French agreement (to participate in the negotiations) b. French wine

On the thematic use, the adjective describes a participant in the situation described by the verb underlying the nominalization, whereas on the classificatory use, it refers in the default case to the origin or provenance of the object denoted by the noun.

McNally & Boleda (2004) offer an analysis of relational adjectives (RAs), of which EAs are a subclass, on which RAs denote properties of kinds (as the classificatory use suggests); however, they fail to extend their analysis explicitly to the thematic use. In this paper we provide a unified analysis for the two uses which reinforces McNally & Boleda’s claim that such adjectives describe kinds and which casts doubt on the strong trend in the syntax literature to distinguish the two uses structurally (Alexiadou & Stavrou, to appear, the most recent example).

The main challenge for a unified analysis of EAs is the claim (see e.g. Kayne 1984) that, on the thematic use, EAs are restricted to filling the “external” thematic role (or, according to Alexiadou & Stavrou, to appear, the agent role) associated with the nominalization. For example, (2a) can only be paraphrased as (2b) and not as (2c):

(2) a. the French discovery b. the discovery by France c. the discovery of France

The question is how such a restriction could follow naturally from a semantics for (1b). On McNally & Boleda’s analysis, French wine has the semantics in (3a), where wine denotes a function from kinds to sets of individuals realizing the kind (via Carlson’s 1977 realization relation R), and French restricts the identity of that kind. Applying this analysis directly to (2a) as in (3b), it is unclear why French can only pick out those subkinds of discovery events on which France (or more precisely some French representatives, as is also the case with the noun France in (2b)) is the discoverer and not those on which it is discovered.

(3) a. \( \lambda x_1 \lambda y [R(y, x_k) \land wine(x_k) \land French(x_k)] \)
   b. \( \lambda x_1 \lambda y [R(y, x_k) \land discovery(x_k) \land French(x_k)] \)

To answer this question, we begin by rephrasing the semantics of French as in (4), where R is a contextually-determined relation between the kind described by the nominal property \( P_k \) and France (see Mezhevich 2002, Fradin & Kerleroux 2003, though they do not make use of kinds).

(4) \( \lambda P_k \lambda x_1 \lambda y [R(y, x_k) \land P_k(x_k) \land R(x_k, France)] \)

We propose that the role restriction on the thematic use is an extension of the default preference for the origin/provenance reading on the classificatory use. Specifically, we argue that the thematic use is a restriction to roles which materially originate the eventuality described by the nominal. Thus, R on both uses will, in the absence of contextual information to the contrary, be a vague Originates relation.

This analysis makes a number of correct predictions not made or even noticed by previous analyses of these adjectives. First, it sheds light on the fact that the role restriction on the thematic use is particular to EAs and not attested with other RAs such as molecular ((5)): the default provenance reading is specific to EAs (presumably due to the combination of a
nation/group root with the –an derivational morphology) and not found with other RAs on a classificatory use.

(5) molecular stimulation (= stimulation of/by molecules)

Second, since the analysis is strictly semantic and not grounded in a syntactic theory of argument structure, it predicts that typical “internal” or nonagentive arguments that nonetheless could be considered originators of the eventuality in question (and not those which cannot) can be described by EAs – contrast especially (6b-c):

(6) a. the French arrival in Mexico b. French disappearance from Upper Louisiana c. ??the French disappearance from the list of countries that haven’t approved the treaty

Third, the unified semantics correctly predicts that, just as the provenance interpretation for R on the classificatory use is simply a default subject to contextual variability and certain patterns of semantic evolution (to be described in detail in the talk), the role restriction can also be relaxed when context renders it necessary. For example, if the external argument is explicitly provided (e.g. by a possessor or a PP), the EA can express a different relation ((7)).

(7) Ricky Martin’s American invasion

Fourth, we will show how, by maintaining an analysis of EAs as kind descriptors, we can account for a number of asymmetries in the distribution and interpretation of EAs vs. prima facie related PP modifiers, such as those in (8):

(8) a. George Washington was the father of America (= the American father).
   b. George Washington was a president of America (= an American president).

Finally, the analysis avoids several problems faced by the semantic analyses implicit in non-unified syntactic analyses, on which the EA is projected as a nominal on the thematic reading and assumed to saturate an entity-type argument of the nominal. First, it is simpler, avoiding the inelegant claim that RAs are lexically ambiguous. Second, it accounts for the exceptions to the putative restriction to ‘external’ arguments, which, as we show, do not follow from analyses such as Alexiadou & Stavrou’s. Finally, it directly accounts for the fact that EAs cannot bind pronouns (Postal 1969), provide an antecedent for personal pronouns ((9)) or control a relative pronoun (see Alexiadou & Stavrou, to appear, for additional examples and discussion).

(9) *The American proposal to the UN reveals its/her rigid position.

In sum, we propose a syntactically and semantically unified analysis for the two uses of EAs as a special subclass of RAs, on which these uses are simply a by-product of the interaction between the semantics of the EA and that of the nominal. As the relation the adjective contributes is vague and subject to contextual variation, the proposal accounts for the fact that – as we will show – the two uses are sometimes hard to distinguish. Finally, in doing without a lexical or syntactic ambiguity in the adjective, the analysis constitutes another example of the viability of Larson’s (1998) program for maximal uniformity in the syntax and semantics of adjectives.

An Analysis of Inferential Evidentials as Dimensional Shifts

Thomas Gamerschlag & Wiebke Petersen
(Heinrich-Heine-University, Düsseldorf)

In the past decades there has been an increasing interest in evidentiality, understood as grammaticalized source of information. In the course of this process, a number of mostly typological studies have arisen, which have a strong focus on evidentiality encoded by grammatical markers, i.e., by verbal affixes or modal auxiliaries (Chafe & Nichols 1986, Willett 1988, de Haan 1999, Aikhenvald 2004 among others). However, as recently argued by Whitt (2009) in a comparative corpus study of English and German, perception verbs such as German klingen ‘sound’ in (1) are another lexical means to express evidentiality. Thus, beside the non-inferential use of klingen in (1a), in which a directly perceived auditory quality is ascribed to the subject referent, klingen can also be used to mark inferential evidentiality (1b–d):

(1) a. Seine Stimme klingt dumpf. ‘His voice sounds muffled.’
   b. Die Wand klingt massiv. ‘The wall sounds solid.’
   c. Die Sonate klingt schwierig. ‘The sonata sounds difficult.’
   d. Seine Nase klingt verstopft. ‘His nose sounds congested.’

In all of the examples in (1b) to (d), klingen expresses that there is auditory evidence for the statement made up of the subject and the predicative complement of the perception verb. In (1b) the claim that the wall is solid, is inferred from the way it sounds. Likewise, in (1c) and (d) the properties ascribed to the sonata and the nose are based on auditory evidence. As stated by Whitt (2009), all of the evidential uses of klingen found in his corpus study are instances of inferential evidence as opposed to other types of evidentiality such as hearsay and non-inferential uses as in (1a). However, apart from these distributional facts there has been no analysis of how the process of inference in inferential evidentials works. A proper analysis has to explain why the awkward examples in (2) are ruled out:

(2) a. Die Wand klingt/ist weiß. ‘The wall sounds/is white.’
   b. Die Sonate klingt/ist lang. ‘The sonata sounds/is long.’
   c. Seine Nase klingt/ist sommersprossig. ‘His nose sounds/is freckled.’

The awkward combinations of klingen and predicative complement in (2) cannot be excluded by a mismatch between the sort of the subject referent and the sortal restrictions of the verb or the predicative complement. As shown by the corresponding copula sentences, the predicative phrase can be combined with the subject. Moreover, the examples in (1) demonstrate that klingen can select the subjects that appear in the awkward sentences in (2). Obviously, the klingen-sentences in (2) are ruled out not because of a violation of sortal restrictions but because they are instances of non-admissible inferences.

The inferential use is not confined to verbs of auditory perception. Verbs such as aussehen ‘look (like)’, schmecken (nach) ‘taste (of)’, sich anfühlen ‘feel (like)’, riechen (nach) ‘smell (of)’, which refer to sense modalities other than SOUND, can also be used as inferential evidentials. In our talk, we present a frame-theoretic account which covers the inferential and non-inferential use of perception verbs of any sense modality. Following Barsalou (1992), we define frames as recursive attribute-value structures which are represented as directed labeled graphs with the arcs corresponding to attributes and the nodes to their values (cf. Petersen 2007). As illustrated in (3), attributes such as SOUND, STRUCTURE, COLOR constitute cognitive dimensions of the represented object (wall) and assign unique values (e.g., muffled) to them.
Furthermore, we assume that frame signatures capture the knowledge about admissible frames by restricting the set of appropriate attributes and their values for object classes. Given our frame model, the admissible inferential and non-inferential uses of perception verbs are captured as constraints on attributes assigned to the subject referent, the verb and the predicative complement. More precisely, we assume that the perception verb encodes a single, specific attribute, we refer to as ‘dimension’. This dimension is determined by the sense modality the perception verb is connected with, e.g., the dimension encoded by \textit{klingen} is \textit{SOUND}.

\begin{itemize}
  \item[(3)] \textit{Die Wand} …
  
  (a) \ldots \textit{klingt dumpf}
  
  (b) \ldots \textit{klingt massiv}
  
  (c) \ldots \textit{klingt weiß}
\end{itemize}

In the non-inferential use in (3a) the predicative complement specifies a value along this dimension. The inferential use in (3b) is characterized by a mismatch between the predicative complement and the dimension encoded by the verb: \textit{massiv ‘solid’ in \textit{klingt massiv} ‘sounds solid’} is not a possible value inside the dimension of sound. However, the value belongs to a different dimension, namely \textit{STRUCTURE}, which can be inferred from \textit{SOUND}, since the sound produced by tapping on an object is determined by its physical structure. The inference can be described as a dimensional shift from \textit{SOUND} to \textit{STRUCTURE}. For a dimensional shift to be admissible, minimally the constraint must hold that the subject referent exhibits both the dimension encoded by the verb and the dimension which belongs to the value specification. We assume that the repertory of dimensions exhibited by an object is part of the conceptual knowledge of objects. In addition, for a given subject referent the constraint must be fulfilled that the implicit dimension is inferable from the one explicitly encoded by the perception verb. In our model, we encode the information about admissible inferences in our frame signature. The frame in (3c) demonstrates why the latter constraint is indispensable. It shows a white wall with unspecified sound characteristics. But although the wall fulfills both sortal restrictions of \textit{klingt weiß}, namely being white and having a sound, the frame in (3c) cannot be inferred from \textit{klingt weiß} since the color of an object is not inferable from its sound. Again, we assume that the knowledge of admissible inferences is part of the conceptual knowledge of objects.

We will argue that a frame analysis is ideally suited for the treatment of inferential evidentials since a proper analysis requires explicit reference to object dimensions, which can easily be represented as frame attributes. In addition, the device of frame signatures, which we apply to identify admissible inferences, is well-established in frame-theoretic models. In our talk we will also present more intricate examples including dimensional shifts involving more than one inference step like \textit{schmeckt alt} ‘tastes old’, where the attribute \textit{AGE} can be inferred from \textit{TASTE} via \textit{FRESHNESS}. Other complex dimensional shifts involve attributes not attached to the same node as in \textit{seine Stimme klingt traurig} ‘his voice sounds sad’ Here, \textit{traurig} ‘sad’ can be analyzed as the value of the attribute \textit{MOOD}, which is not attached to the voice-node but to the node of the owner of the voice, while \textit{SOUND} is an immediate attribute of \textit{voice}. Hence, the inference goes from an immediate attribute of the subject referent to a deeper embedded attribute. The representations in our frame-based account are sufficiently expressive to capture complex instances of dimensional shifts since the attributes involved in inferences are explicitly represented in frame representations.

Since our analysis makes explicit reference to shifts between properties which are part of the conceptual knowledge of objects, it is closely related to Lakoff’s theory of conceptual mapping (Lakoff & Turner 1989, Lakoff 1993). At the end of the talk, we will briefly address
the question to which extent our approach contributes to this theory. In addition, we will shortly discuss a treatment of dimensional shifts as type coercion in the sense of Pustejovsky (1995), which involves a shift of the logical type of an argument. We will argue that the kind of shift under discussion requires a broader view of coercion since the predicates which trigger the shift (e.g. massiv ‘massive’ in (3b)) are of the same logical type (= <e,t>) as the predicates which occur in the non-inferential use (e.g. dumpf ‘muffled’ in (3a)).

Coercion and anaphoric use of Mandarin classifiers

Laurent Prevot\textsuperscript{a} and ShuKai Hsieh\textsuperscript{b}
\textsuperscript{a}Laboratoire Parole et Langage, Univ. de Provence
\textsuperscript{b}LOPE, National Taiwan Normal University

Classifiers in Mandarin Chinese are required elements of well-formed noun phrases. They have to appear between the determiner and the noun as shown in example (1). The variety of classifiers, has been described and analyzed in \cite{9, 4, 6} among others. Classifiers are often separated from measure words by requiring them to hold a [+sortal] attribute \cite{4}. In \cite{6}, classifiers are divided into individual, kind and event classifiers on the ground of a corpus-based classifier dictionary \cite{5}. A formal analysis of the distinction between kind and individual classifier has been proposed in \cite{8}. In this study we will focus however on individual classifier and measure words.

Huang and Ahrens suggest, without proposing a formal account, that classifiers can coerce the interpretation of the noun they classify (as in (1) taken from \cite[p361]{6})).

\begin{quote}
(1) 一 朵 / 株  花
yi4 duo3/zhu1 hua1
one CL.bud/CL.plant flower

one flower bud/one flowering plant
\end{quote}

In this work, we are dealing in the interaction between two phenomena: (i) classifier coercion (illustrated in the previous examples) and (ii) the anaphoric use of classifiers, exemplified in (2). In this example, the second sentence is missing a noun. As a reviewer pointed us, it is tempting to assume that in 'DET+CL' constructions the classifier becomes a noun. However, most of the classifiers cannot be used as nouns in other contexts.\footnote{Some words like 碗 / wan3 (bowl), can be used both as classifiers and nouns, but as nouns they requires another classifier to precede them.} It would be going against the standard view on Mandarin syntax to assume here a category change, see for example \cite{10}.

\begin{quote}
(2) 我 買 了 五 粒  水餃
wo3 mai3 le5 wu3 li4 shui3jiao3
I buy ASP five CL.grain dumplings

I bought five dumplings

你 吃 了 四 粒
ni3 chi1 le5 si4 li4
you eat ASP four CL.grain

You ate four
\end{quote}
Example (3) shows an incomplete NP referring back to a previous noun that has been classified differently in the previous sentence. Here ’花 -hua1’ (flower) is used a first time with a plant classifier (株 -zhu1) that allows in the second sentence an anaphoric use of another classifier (朵 -duo3/(bud)) that re-classify the noun at distance.

(3) 你 看 這 株 花
ni3 kan4 zhe4 zhu1  hua1
you look this CL.plant flower
'Look at this flower'
剪 一朵 給 我
jian3 yi4 duo3 gei3 wo3
cut one CL.bud give I
'Cut one bud for me’

In 4 a tentative treatment for the phenomenon is proposed. The formal apparatus include DRT [7] and some ingredients from [3] for handling associative anaphoricity. We propose that the missing noun introduce some kind of relation R between the object described by the incomplete NP and the context. When the anaphoric use is felicitous the relation R should be specified and instantiated with a variable of the context. Moreover, we assume a type system for the variables on top of the logical forms. The typing system is inspired by the the rich typing framework proposed in [1, 2]. In example (3), the variables are typed by the classifiers as ⟨PLANT⟩ and ⟨BUD⟩. In the lexicon, a PART-OF holds between these two types. It is therefore straightforward to instantiate the relation R.

(4)  [Y(ANIM), X(PLANT), e1(EVT)|look(e1, Y, x), flower(x)]
⊕_update [y(BUD), e2(EVT)|cut(e2, Y, y), R(y, ?)]
~P伴侣-associated BUD PLANT] Part - of⟨y,x⟩

Examples like (3) might not be extremely common as it relies on the specific kind of polysemy of ’花 -hua1’. However, very similar phenomena occurs with quantity or measure related examples like (5) and (7) that are frequent in spoken Chinese. Example (3) featured a noun being coerced by two different classifiers into two different objects. In example (7) the mass noun is measured twice as two different quantities. Example (5) is more complicated to handle since 糖果 -tang2guo3 (candy) is used once with a quantity and once with a real classifier.

(5) 你 看 這 包 糖果
ni3 kan4 zhe4 bao1  tang2guo3
you look this CL.bag candy
'Look at this bag of candies’
拿 一 項 吧
na2 yi4 ke1  ba5
take one CL.small-hard IMP
Take one!
To handle this example, we need to make use of the dependent types introduced in [2] as illustrated in 6. From those dependent types can be derived some useful information showned in 6:b. The second sentence introduce 顆 -ke1, a real classifier used for small hard grain-like things (SH in our formulas). This type being compatible with candies, we can instantiate the relation R accordingly.

\[(6)\]
\[
Y(\text{ANIM}) \times \lambda x(yz(CANDY)) \times e(Y, x), e(x, y) \times \text{bag}(x) \]
\[
\times \text{update}(y, SH), e2(Y, y) \times \text{take}(e2, Y, y), R(y, y)
\]

\[(7)\]
\[
\text{ni3 zhe4 yi4 wan3 tang1 kanqii3lai2 hen3 hao3 he1 you this one CL.bowl soup seem very good drink}
\]
\[
\text{讓我嚐一口吧}
\]
\[
\text{rang4 wo3 chang2 yi4 kou3 ba5 let I taste one CL.mouth IMP}
\]

\[\text{Let me taste a sip of it!}\]

It would be important to detail how the proposal is implemented in a compositional framework, but due to lack of space this will be done during the presentation only. However, th main line should run as follows. Real classifiers [+sortal] 'S' will have for lexical entries things like 'λPλxP(x)' and those for measure words [-sortal] 'Q' will look like 'λPλxQTV(P)|Q(x)'.

Moreover, a cross-linguistic comparison with related phenomena such as adnominal pronouns will be presented as well. Finally, a deeper integration with recent syntactic analysis such as [10] has still to be investigated in order to propose a more general solution for a formal treatment of Mandarin classifiers and measure words.

References


This work deals with the semantics of the French additive aussi. We make the broad hypothesis that its semantics closely match those of its English equivalent too. Thus, we rely on the usual formal analysis given to too, but will use experimental data on aussi. A complete analysis would test both items to check for differences, although as far as our knowledge is concerned, the differences are slim.

Traditional analyses of too (e.g. (Krifka, 1999)) describe it as a focus-sensitive and presupposition-triggering operator. For example, in (1), too associates with Mary and conveys the presupposition that someone different from Mary came (in that case: John).

(1) John left and Mary did #(too).

The presupposition of too is anaphoric (cf. (van der Sandt and Geurts, 2001)): its antecedent must be salient in the discourse and cannot be accommodated. This explains why (2) is infelicitous, even though it is clear that Lemmy was not alone at dinner in New York.

(2) # Lemmy had dinner in New York too.

Apart from its presupposition, too is said to be semantically void, i.e. it does not contribute anything to the asserted part of its host utterance. Thus, in (1), the asserted part of the second conjunct is “Mary came”. Furthermore, as indicated in (1), too appears to be obligatory when its felicity conditions are met. This led a number of authors (see (Amsili and Beyssade, 2009) and references therein) to treat this phenomena as a case of obligatory presupposition.

We argue that the presence of a semantically compatible antecedent for the presupposition is not a sufficient condition for using too: its acceptability depends upon the segments being similar in the discourse (§1), a proposal we couch in an argumentative approach (§2). This proposal is then articulated with accounts of the obligatoriness of too (§3).

§1: Some examples seem to contradict the description of too given above. For example, (3) is felicitous, but (4) is not, even though both have an antecedent compatible with too’s presupposition (or its negative counterpart either).

(3) Lemmy solved only some of the problems and Ritchie didn’t solve all of them either.

(4) # Lemmy solved only some of the problems and Ritchie solved some of them too.

In (3), the antecedent is the asserted part due to only\(^1\), i.e. “Lemmy did not solve more than some of the problems” (which entails that he did not answer all of them), whereas in (4), the antecedent is the presupposed part of only: “Lemmy solved some of the problems”. (5) shows that a presupposed proposition can serve as an antecedent for too’s own presupposition (as for most anaphoric items), and therefore that the presupposed nature of the antecedent cannot be the reason for the infelicity of (4).

(5) Lemmy’s proud to be a bass player. Roberto plays bass too.

Given that (4) becomes better without too (at least as an answer to the question “How many problems did Lemmy and Ritchie solve each?”), we conclude that its presence is responsible for the infelicity of (4), a fact unaccounted for in the traditional analyses of its meaning.

Another set of problematic data is given in (6). There, each conjunct includes a modal along the scale (certain, highly likely, likely, possible). An element on the scale logically entails all elements below it, and is understood as being more probable than them.

(6) A: Bordeaux and Marseille will each play a football match abroad. What are the odds?
   a. B: The victory of Bordeaux is certain, and that of Marseille is highly likely too.
   b. B: ? The victory of Bordeaux is certain, and that of Marseille is likely too.
   c. B: # The victory of Bordeaux is certain, and that of Marseille is possible too.

\(^{1}\) We rely on standard analyses of only, as can be found in (Klinedinst, 2005).
Intuitively, the felicitousness of using *too* to link the modal in the second conjunct to *certain* in the first conjunct degrades as one goes down the scale for the second modal. This is not expected if one assumes that the presupposition of *too* can be bound to a logical entailment of a previous discourse segment (which indeed seems to be the case in the more felicitous (6)a, as well as in (3)).

A pilot experiment, ran in French2, asked subjects to rate the naturality of these sentences (among different types of filler) with the help of a slider bar. The subject’s answer translated into a number between 0 and 100, with 100 being the mark for perfect naturality.

The results presented in the attached figure confirm that the naturality of the examples goes down as the distance between the modals grows. The observed differences between each example are statistically significant (all *p*-values are under 5% for the Mann-Whitney Rank Sum test). Once again, purely presuppositional analyses of *too* cannot account for these observations3.

§2: To predict the differences between (3) and (4) and the gradience effect in (6), we make the hypothesis that *too* conveys the *similarity* of its host and its presupposition’s antecedent regarding the discourse topic (in a non technical sense). For example, in (6)c, speakers are reluctant to accept the fact that *being possible* and *being certain* are the same regarding the odds of a game: two things can be semantically compatible, yet appear different. We propose to capture this through the notion of argumentation (e.g. (Anscombe and Ducrot, 1983)), and its explication by the notion of relevance. The basic tenet of this theory is that a proposition p is said to argue for a conclusion H iff. its relevance to it is positive (which is noted $r_H(p) > 0$).

Relevance can be defined in various ways, irrelevant to our present purpose (see (van Rooij,2004) for more details). Our proposal for the argumentative meaning of *too* is then as follows:

- Let $S$ be a sentence to which *too* applies, and $A$ the associate of *too* in $S$
- Let $\text{Ant}^\prime$ be the host of the antecedent of the presupposition of *too* in $S$
- Let $\text{Ant}^\prime$ be the result of the substitution of $A$’s alternative in $\text{Ant}^\prime$ by $A$ itself
- Then $r_H(S)$ and $r_H(\text{Ant}^\prime)$ must be similar (i.e. have the *same sign* and *close values*: the closer the relevancies, the more felicitous the utterance)

Applied to (6)a, this means that the relevancies of “*The victory of Marseille is highly likely*” (=S) and “*The victory of Marseille is certain*” (=Ant’ obtained by substitution of Bordeaux by Marseille) must be close for the utterance to be felicitous. In the context of (6), this is somehow acceptable (see the score for (6)a), whereas the lower modals are less felicitous since, in this context, the modal scale also serves as an argumentative scale (i.e. relevancies also go down the entailment scale). For (4), we assume, with Anscombe and Ducrot, that only switches the argumentative orientation of its prejacent. Thus, the second conjunct is in a systematic argumentative opposition to the first and our proposal correctly predicts that *too* cannot be felicitous there. By contrast, in (3) both conjuncts have argumentation-reverting

---

2 The placement of French *aussi* (=*too*) non-ambiguously identifies its associate: the examples tested cannot have been understood as having the whole conjunct, rather than the NP, as the associate of *too*. We intend to run another survey to add results for identical and logically incompatible modals.

3 An analysis relying on local scalar implicature derivation might successfully link the binding of the presupposition of the right conjuncts in (6) to the (non)presence of an exhaustivity implicature attached to the modal. However, the data in (4) shows that if there are local scalar implicatures, *too* remains blind to them. Otherwise, (4) should be felicitous since the interpretations of the predicates in the left and right conjunct would be identical once the right conjunct is exhaustified.
operators in them: *only* in the first and a *negation* in the second. Given that, usually, *some* and *all* argue in the same direction, “*only some*” and “*not all*” will also argue in the same direction, which readily explains the possibility of (3).

§3: In (6)a, the presence of *too* is optional. Recent accounts (e.g. (Amsili and Beyssade, 2009) and references therein) predict that it should be obligatory under the threat of an inconsistent antipresupposition, derived in Neo-Gricean fashion. They assume that *too*’s meaning is limited to its presupposition, and hence that adding *too* or not to the right conjunct of (6)a creates two *alternatives* differing only in this presupposition. Omitting *too* then conveys that *Marseille* is the only team who is highly likely to win, which contradicts the first conjunct and should prompt the preference for *too*. We argue that the argumentative dimension allows us to explain the optionality of *too* in (6)a. In this example, the speaker decides whether he wants to enforce the similarity between non-identical conjuncts: *too* does not induce alternatives. If the speaker chooses to use *too*, he explicitly conveys that the conjuncts are argumentatively equivalent. If he doesn’t, he remains neutral on the issue. But in the case the conjuncts are similar, as in (1), argumentative similarity is trivial and *too* necessarily creates alternatives. The Neo-Gricean mechanism then applies, correctly predicting the obligatoriness of *too*.

Anaphoric adverbials
A discourse analysis of asserted and presupposed adverbial clauses
Mailin Antomo, U Göttingen

Summary: In this talk, I will show that, crosslinguistically, two types of adverbial clauses can be distinguished: those which can undergo root transforms, and those which cannot. The availability of root transforms is generally explained in terms of presupposition and assertion: Only non-presupposed clauses allow root transforms. I will argue, that the presupposition of temporal clauses is best explained in pragmatic terms. Furthermore, I will implement the data into File Change Semantics, treating presupposed clauses like anaphoric expressions which must link up to an antecedent. In contrast, non-presupposed adverbials introduce a discourse-new event.

Getting the facts: A taxonomy of adverbial clauses: Crosslinguistically, only certain types of adverbial clauses can undergo root transforms such as V2 order in Germanic, Left Dislocation in English or topic markers in Japanese (see Heycock 2005, Hooper and Thompson 1973, Sawada and Larson 2004 and Wechsler 1991 for an overview). Whereas causal clauses allow root transforms (see 1a for Left Dislocation in English and 2a for V2 order in German), temporal clauses crosslinguistically resist them (see 1b and 2b).

(1) a. Mildred bought a Mercedes because her son, he owns stock in Xerox.
    b. * Mildred bought a Mercedes when her son, he purchased stock in Xerox.

(2) a. Paul aß ein Brot, weil er war hungrig.
    Paul ate a sandwich because he was hungry

    b. * Paul aß ein Brot, bevor er war hungrig.
    Paul ate a sandwich before he was hungry

Thus, there is a taxonomy between adverbial clauses which allow root transforms and those which cannot undergo root transforms. Since Hooper and Thompson (1973), it is consensus that the availability of root transforms depends on the semantic nature of the embedded clause. The observed correlation is that only embedded clauses whose content is asserted can undergo root transforms, whereas presupposed clauses resist them. Thus, temporal clauses are always presupposed, correspondingly, causal clauses are neutral, that is, it depends on the context if their content is presupposed or asserted. This claim is
confirmed by standard presupposition tests.

Following Truckenbrodt (2006), I assume that the distinction between presupposed and asserted clauses relies on the absence or presence of an epistemic context index $<$Epist$>$ in the C-system. Together with a deontic index $<$Deont$_S$, A$>$, $<$Epist$>$ triggers an update of the Common Ground as shown in (3). In presupposed clauses, $<$Epist$>$ is not active.

$$<<$Deont$_S$, A$>, <$Epist$> >$$

$S$ wants from $A$ that it is Common Ground that $p$.  

**Explaining the facts: conventional or conversational?** It is possible to distinguish two views on presuppositions, a semantic and a pragmatic one. As far as the presupposition of temporal clauses is concerned, I will argue that it is conversationally triggered. The presuppositional nature of temporal clauses can be derived on the basis of the lexical semantics of a temporal conjunction and general principles of utterance. In an utterance $\phi$ before $\psi$, the temporal clause $\psi$ is used in order to date the new introduced (asserted) event $\phi$. In order to fulfill this function, the event $\psi$ must be presupposed to have occurred and must be part of the Common Ground.

**Syntactic and semantic domain** According to Johnston (1994), temporal adverbial clauses always restrict a covert or overt adverb of quantification. As shown in (4a), a temporal conjunction like when combines two open events. In contrast, a causal conjunction like because can express a binary relation between two closed events as shown in (4b). Since the temporal connective in (4a) restricts an adverb of quantification, Sawada and Larson (2004) conclude that it is presupposed to be non-empty. On the other hand, the causal connective in (4b) doesn’t serve as a quantifier restriction and is therefore not presupposed.

$$<$$Deont$_S$, A$$>$, $<$Epist$>$

(3) $S$ wants from $A$ that it is Common Ground that $p$.

(4) a. $\exists$ when$^{'}_{e1} (...)_{e1} [..._{e2}]$

b. because$^{'} (\exists e_1(...e_1), \exists e_2(...e_2))$

Comparing the two structures in (4a) and (4b), it becomes obvious that a temporal connective applies to a smaller semantic domain than because. That presupposed clauses have a smaller semantic domain than asserted clauses is consistent with the fact that they lack $<$Epist$. And that this semantic difference is reflected in the internal syntactic structure of our two types of adverbial clauses has been shown independently by Haegeman (2003), who assumes that adverbial clauses which cannot undergo root transforms have a truncated left periphery.

**Representing the facts: File Change Semantics** Originally, Heim (1982)’s File Change Semantics has been created to account for the differences between definite and indefinite NPs. Whereas the latter introduce a new file card, the former merely update an existing file card. Like definite NPs, temporal clauses are presupposition triggers. It is therefore attractive to treat presupposed and non-presupposed adverbial clauses like definite and indefinite NPs. Both types of adverbial clauses express indexed events. Whereas NPs are marked for the feature [+/-definite], events are marked [+/-Epist]. With respect to this
feature, they impose different appropriateness conditions on files: If the clause contains the context index <Epist>, that is, the adverbial clause is asserted, it introduces a new index and therefore a discourse-new event as shown in (5a). In contrast, if <Epist> is absent, as it is the case in temporal clauses, the expressed event is presupposed to be familiar and the index must be element of the domain of the current file card f as shown in (5b). Thus, presupposed clauses function as anaphoric elements which enter into a discourse dependency.

(5) **Novelty/Familiarity Condition for propositions:**
Let F be a file, p_i an atomic proposition. Then p_i is appropriate with respect to F iff:
- If p_i is marked [+Epist], i \notin \text{Dom}(F_{ev}), and
- If p_i is marked [-Epist], i \in \text{Dom}(F_{ev})

References


We argue that presuppositions of verbal predicates are predictable. Following Stalnaker (1974) among others, we assume that an entailment $\psi$ of an atomic sentence $S$ is turned into a presupposition of $S$ if $\psi$ is distinguished in some sense from the rest of the meaning that $S$ expresses. We propose that entailments that are not about (in the formal sense to be defined below) the principal arguments of the sentence $S$ are presupposed. Unlike previous approaches to presupposition triggering by Wilson and Sperber (1979), Simons (2001) and Abusch (2002), the present paper can avoid overgeneration (in contrast with Simons and Wilson and Sperber) and does not have to resort to lexical stipulation (as in the case of Abusch).

The proposal. We use a sentence when we want to provide information about the principal arguments of its main predicate. Assume that the principal arguments of a sentence $S$ are: (a) the participants of the event denoted by the matrix verb and (b) the event time of the matrix verb. Given this, the mechanism that turns certain entailments into presuppositions is as follows:

1. The entailments of an atomic sentence $S$ that are not about the principal arguments of the matrix predicate of $S$ are presupposed.

The two types of principal arguments are treated separately by the triggering mechanism: It checks whether there are entailments that are not about the participants of the event, if yes, these are presupposed. Independently it also checks whether there are entailments of $S$ that are not about the event time, if yes, these are presupposed as well. The above mechanism applies to atomic sentences. Presuppositions of complex sentences are derived from the presuppositions of atomic sentences they contain, via some projection mechanism (e.g. Heim 1983 or other).

Being about an argument. Demolombe and Fariñas del Cerro (2000) defined what it means for a formula of FOL to be about an argument, which we extend for richer languages that can handle attitude verbs. The proposal has two parts: first we need to introduce the notion of variants of a possible world $w$ with regard to an object $c$. Two worlds $w$ and $w'$ are $c$-variants if they only differ by the truth assignment to atomic sentences where $c$ appears as an argument (or sentences equivalent to these): Given this, we might define aboutness as follows:

2. A sentence $S$ is about an object $c$ iff there are two worlds $w$ and $w'$ which are $c$-variants and $S(w)=1$ and $S(w')=0$.

The sentence $S=$ *Fido is tired* is about Fido iff there are two *Fido*-variants $w$, $w'$, st. $S(w)=1$ and $S(w')=0$. Notice that the definition above quantifies over all worlds, therefore the entailment $\psi=$ *some individual is tired* is also about Fido, because there are two worlds which differ only in the properties of Fido, st. and $S(w)=1$ and $S(w')=0$, e.g. if Fido is the only tired individual in $w$.

Example 1: Know. Consider $S=$ *John knows at $t_1$ that Mary is tired*. The principal arguments of $S$ are *John* (the event participant) and $t_1$ (the event time). Let $K$ be the set of all the propositions that $S$ entails. $K$ will contain (a) lexical entailments of $S$, (e.g. $\gamma$, $\phi$, $\psi$, $\chi$, $\xi$ below), (b) entailments formed by replacing syntactic constituents by existentially quantified variables, and (c) disjunctions of any of the previous with any proposition.

3. $\gamma=$ John knows that Mary is tired; $\psi=$ John believes that Mary is tired; $\phi=$ John’s belief is justified; $\chi=$ Mary is tired; $\xi=$ John is capable of having beliefs.
Let’s calculate first if there are any entailments that are not about the event participant, John. Let’s look at the elements in K: (a) Among the lexical entailments in (4) above only $\chi$ is not about John. (b) existential sentences in K are about John (c) (as shown in the paper) among disjunctions in K the propositions that are not about John are tautologies or contain $\chi$ as a disjunct. Thus the intersection of the entailments that are not about the principal argument John is the proposition $\chi$ that Mary is tired, which is indeed the presupposition of S above. (In general, it is shown that closing lexical entailments under entailment does not generate more presuppositions than can be derived from the set of lexical entailments alone). Second, we check if there are entailments of S that are not about the event time: $\xi$ is such. In general, we assume (extending some remarks in Magidor (2007)) that sortal presuppositions always express generic modal statement, where the modal involved is a circumstantial or ability modal. Hence, they will always be independent from the matrix event time, and thus presupposed.

Example 2: Stop Consider the sentence John stopped dancing with Mary at $t_1$ which has two principal arguments (John and $t_1$) and is assumed to trigger the following lexical entailments:

(4) $\psi=$John does not dance with Mary at $t_1$; $\varphi=$John danced with Mary at $t_2$ (where $t_2$ refers to some time before $t_1$); $\chi=$John stopped dancing with Mary at $t_1$; $\xi=$John is capable of dancing.

Let’s look at the event time ($t_1$). Among the lexical entailments above the ones not about $t_1$ are $\varphi$ and $\xi$, which are also the entailments that are presupposed. (As before, the disjunctions in K that are not about $t_1$ will be tautologies or will contain $\varphi$ as a disjunct.). Looking at the event participant, John, we can see that all of the entailments above are about John.

Example 3: Discover Consider John discovered that Sue was tired at $t_1$. The principal arguments are John and the event time. Analogously to stop, the entailment that is not about $t_1$ (besides sortal presuppositions) is that John did not know that Sue was tired at $t_2$ ($t_2 < t_1$). Analogously to know, the entailment not about John is the proposition that Sue was tired.

Example 4: Kill Consider the sentence John killed Bill at $t_1$. The principal arguments are John, Bill and $t_1$. The lexical entailments might be:

(5) $\psi=$John killed Bill at $t_1$; $\varphi=$Bill is dead at $t_1$ $\chi=$Bill was alive at $t_2$ (where $t_2$ refers to some time before $t_1$); $\xi=$John is capable of killing

Looking first at the participants in the event John and Bill, it seems that no lexical entailment is such that it is not about at least one of these. Considering the event time $t_1$, $\chi$ and $\xi$ are not about $t_1$ and might indeed considered to be presuppositions of S.


1 Presuppositions of sentences with co-referential pronouns (e.g. John knows that he is tired) are derived by assuming that the presupposition is calculated on a level of representation that does not yet have the contextual information about co-reference factored in.

2 Notice that if the embedded clause corresponding to $\chi$ did not have present tense, it would be predicted to be presupposed by this calculation as well, not just in virtue of not being about John.
In this paper I will examine the implications of rhetorical relations for the content of predicate terms. Rhetorical relations (or discourse relations) have been identified as the principles which account for textual cohesion.\textsuperscript{1} Such relations are, e.g., Narration, Parallel, Contrast and Explanation (Hobbs 1985, Mann & Thompson 1986, Polanyi 1995, Kehler 2002, Asher & Lascarides 2003).

A theory of cohesion in terms of rhetorical relations may be divided into two parts. There is first a theory of rhetorical relation assignment. What is the correlation between linguistic form and rhetorical relations and which interpretive principles are operative when assigning a rhetorical relation? Second, there is a theory of the semantic implications of rhetorical relations. The starting point is here a pair of clauses or sentences connected via a given rhetorical relation and the output is the content of the clauses or sentences connected. Since I am interested merely in how contextual specification of meaning may be explained by means of rhetorical relations, I will be concerned with the latter theory only. I will thus be interested in what happens to the content of clauses and sentences once a rhetorical relation has been assigned, and leave the question how the rhetorical relation was selected out of account.

Researchers have shown that reference resolution, temporal and spatial determinations, bridging, disambiguation, etc., can be explained as the result of linking sentences together by means of rhetorical relations (e.g. Lascarides & Asher 1993; Asher & Lascarides 1995, 1998). In this way many pragmatic modulations of meaning can be seen as the byproduct of textual connectivity. In order for two sentences to be related by Explanation, for instance, there must certainly be a specific temporal relationship between them. E.g. (1),

\begin{center}
\begin{tabular}{cl}
(1) & a. John fell. \\
    & b. Max pushed him.
\end{tabular}
\end{center}

The assignment of the rhetorical relation Explanation to (1) requires that the event in (1b) precede the event in (1a), for causes precede their effects.

I will argue that the assignment of rhetorical relations to clauses and sentences not only has implications for the phenomena previously listed, but also for the actual content of predicate terms. In other words, the property ascribed by a predicate term may be affected by the requirements of the rhetorical relation assigned to the sentence in which it occurs.

Consider (2):

\begin{center}
\begin{tabular}{cl}
(2) & a. Anne is content. \\
    & b. Celia is happy too.
\end{tabular}
\end{center}

\textsuperscript{1} I take cohesion to be concerned with what makes a text a text, i.e. the fact that a text is not an arbitrary collection of sentences, but that the sentences hang together. Cohesion is thus concerned with rhetorical relations and their implementation. I take coherence to be concerned with other aspects of text structure, such as arrangement, well-formedness, consistency, credibility, etc. All texts are, by definition, cohesive, but they need not be coherent. There may be ill-formed and absurd texts.
It is reasonable to relate (2a) and (2b) by means of the rhetorical relation Parallel. Parallel requires that either the same property is ascribed in (2a) and (2b) or that the property ascribed in (2b) is implied by the property ascribed in (2a). From a lexical point of view, however, this is not the case in (2). Being content and being happy are distinct properties and it is possible to be content without being happy. My claim is that the content of the terms *content* and *happy* in (2) is adjusted in such a way that the requirements of Parallel are satisfied. This amounts to a contextual specification of the content of the terms.

In (3) the clauses are connected via Contrast:

(3) a. In the town she drove carefully;
    b. but once they were outside she speeded up.

(3a) considered in isolation states neither more nor less than that she drove carefully. Once we have assigned Contrast to (3), however, we have to adjust the content of (3a) and (3b) in such a way that there be contrasting elements in the two clauses. It seems reasonable to take the property ascribed in (3a) as involving the property of driving slowly.

In (4) the sentences are connected via Continuation:

(4) a. Anne asked Jane to give her daughter private lessons in French.
    b. Jane started teaching immediately.

We understand the property ascribed in (4b) as involving the property of giving Anne’s daughter private lessons in French, for that is what is required if (4b) is a continuation of (4a).

In (5) the sentences are connected via Elaboration:

(5) a. Anne had a lovely meal.
    b. All the dishes were exquisite.

We should take *exquisite* to imply *lovely* in order for (5b) to elaborate on (5a).

In (6) the clauses are connected via Explanation:

(6) a. She hollowed her hand,
    b. because she was hard of hearing.

The content of (6a) as considered in isolation is that she hollowed her hand some way or other. But if (6b) provides the explanation of the event in (6a), then she cannot have hollowed her hand in just any way. The property ascribed in (6a) must be adjusted in such a way that the event in (6a) is a reasonable consequence of being hard of hearing. Presumably she hollowed her hand round her ear. We must add a specification as a result of the assignment of the rhetorical relation Explanation.

The contextual specifications here considered are different in kind. In some cases the specification is akin to so called mutual adjustment. In other cases, where the specification amounts to additional information, it is similar to pragmatic enrichment, the content of the sentence being richer than the compositional meaning. What is common to the examples is that the specifications in question are mandated by rhetorical relations and made in accordance with their requirements.

The implications of rhetorical relations for the content of predicate terms are methodologically interesting from the viewpoint of the semantics/pragmatics debate. For researchers who

---

2 The properties denoted by the adjective *red* in the phrases *red wine* and *red hair* respectively are arguably different, i.e. the property ascribed by *red* is adjusted in accordance with the noun qualified.
acknowledge that the context may have an impact on the truth conditional content of sentences – beside the obvious cases involving demonstratives and indexicals proper –, basically two options are available. According to indexicalism, contextual specification is required by the linguistic structure of the sentence itself. Indexicalists postulate the existence of slots in the linguistic structure the values of which are filled in by the context. This approach paves the way for a principled account of context sensitivity, but it can arguably be seen as a piecemeal and ad hoc manoeuvre (as argued by, e.g., Cappelen & Lepore 2005). According to radical pragmatics, contextual specification of meaning occurs without being mandated by linguistic structure. Either a principled account of context sensitivity is abandoned and appeal is made to a general urge to make sense of utterances (e.g. Recanati 2007) or the principles invoked are wholly extralinguistic (e.g. Sperber & Wilson 1995).

Rhetorical relations permit us to provide a principled account of certain important forms of context sensitivity which avoids the drawbacks of the dominant positions in the semantics/pragmatics debate. We do not have to make any assumptions regarding the lexical shape of individual linguistic items, nor do we have to explain context sensitivity by means of extralinguistic principles which are merely regulative of human interaction. Rhetorical relations are intralinguistic principles to the extent that they are constitutive for texts which are linguistic entities.

I will argue that the cohesion account has an advantage over other pragmatic accounts of context sensitivity in that rhetorical relations not only require the construction of contextual concepts and properties, but also contain definite instructions for carrying out this construction. The contextual values of predicate terms might be quite unpredictable from the viewpoint of lexical semantics, but are nevertheless obtained via ‘general principles of discourse’ (Grice 1989).

References

On the compositionality of temporal locating adverbial modification
Laure Vieu (IRIT-CNRS), Myriam Bras (CLLE-ERSS-Univ. Toulouse 2), Laurent Prévot (LPL, Univ. Aix)

Semantic puzzles raised by temporal locating adverbials — e.g., ce soir-là (that evening), à huit heures (at eight), pendant la réunion (during the meeting), deux jours plus tard (two days later) — have been less focused on than those involving temporal quantificational or duration adverbials — à toutes les réunions (during every meeting), en une heure (in one hour) [13, 15, 9]. But these adverbials, whose semantics amounts to the location of an eventuality with respect to a time or another eventuality, are involved in phenomena apparently jeopardizing the compositionality of adverbial modification. In this paper, we focus on French data for which we propose an account in Segmented Discourse Representation Theory (SDRT [1]).

Our approach to locating adverbials which assumes that the location relation is contributed by the adverbial itself [3, 18] leads inevitably to the issues we are interested in here. Our view on the semantics of locating adverbials opposes the standard view of, e.g., [12, 14, 17] which assumes that the adverbial simply qualifies a temporal referent systematically introduced along with the location relation by the tense. The standard view, which avoids the problems we will examine, is unable to grasp the semantics of those locating adverbials that involve distance and other temporal relations than simple inclusion. It also cannot account for the fact that temporal NPs such as that evening, monday, the following day are referential expressions and should introduce themselves temporal referents.

As in DRT and SDRT, we use the coarse binary event / state ontological distinction among eventualities. Such a distinction is generally marked by tense (e.g., Passé simple and Imparfait) in French narrative texts, but possibly results from a combination of the Aktionsart of the argument-predicate structure, tense and aspect, and even the larger discourse context (see e.g., [14, 8]). It might be argued that finer-grained distinctions are needed [9, 6] but for the purposes of this paper, this binary distinction suffices.

We focus here on two sides of the compositionality issue: the change of the location relation in the semantics of the adverbial when combined with an event or a state as in (1) (see [14, 17]), and the change of eventuality category introduced by the semantics of the Plus-que-parfait when the locating adverbial changes position in the sentence as in (2) (see [11] for the past perfect).

(1) a. Ce soir-là (t), Marie alla au cinéma (e) (That evening, Mary went to the movies) e is temporally included in t
b. Ce soir-là (t), il pleuvait (s) (That evening, it was raining) s and t temporally overlap

(2) a. Marie était rentrée à la maison à 8h (Marie had come home at 8) location of the coming home event
b. À 8h, Marie était rentrée à la maison (At 8, Marie had come home) ambiguous between location of the coming home event and location of the resulting state of having come home (i.e., being at home)\(^1\)

\(^1\)These two interpretations occur in contexts such as: Qu’avait fait Marie ce soir-là ? (What had Marie done that evening?) / Où était Marie à 8h ? (Where was Marie at 8?). Note that in English, the present perfect is not ambiguous (only resulting state reading).

\(^2\)A right dislocation, as in Marie était rentrée à la maison, à 8h, something prosodically marked, is temporally interpreted as (2-b) and analyzed as IP-adjunct too.

\(^3\)Locating adverbials do not have a fixed syntactic position, contrary to most adverbials. For instance, manner adverbials are always VP-adjuncts, and evaluative adverbials are always IP-adjuncts [5].
positions affect information partition, as illustrated by the different questions under discussion (QUD) in (3). However, this doesn’t suffice to explain the changes in (1) and (2).

(3)  
a. *John arrived at 8*: When did John arrive?  
b. *At 8, John arrived*: What happened at 8?

Other areas of linguistics have focused on the discursive implications of the IP-adjunct position of adverbials, something to be expected given their role external to the clause. In preposed IP-adjunct position, locating adverbials may take scope over several clauses grouped together in so-called “frames” thus transforming them in “frame introducers” [7]. In addition, preposed adverbials have a role in discourse segmentation as markers of discourse topic shifts [4]. In [18, 19] we proposed a formal account of both the framing and the topic-shift roles within Segmented Discourse Representation Theory (SDRT [1]), on the basis of a new, “forward-looking”, use of discourse topics, originally introduced in SDRT for summarizing previous discourse. [2] shows that forward-looking topics are also involved in “inversed” occurrences of the discourse relation *Background*, as in (4-b) and as opposed to the standard (4-a), a discourse relation implying a spatio-temporal overlap between an event and a state.

(4)  
a. *Marie rentra à la maison. Il pleuvait.* (Marie came home. It was raining.)  
b. *Il pleuvait. Marie rentra à la maison.* (It was raining. Marie came home.)

The present paper aims at showing that these two proposals can be combined and extended to explain the meaning changes involved in (1) and (2), preserving compositionality of adverbial modification.

Following [18, 19], we assume that a standard existential closure on the semantics of an adverbial like `à 8h` in preposed IP-adjunct position yields an implicit clause (a new basic segment), corresponding to a new discourse topic. This forward-looking topic with initial propositional content “some event happened at eight”, similar to the QUD in (3-b), is expecting a segment to come (e.g., the clause modified by the adverbial and possibly others) to attach with the *Elaboration* relation to it.

Following [2] and classical studies on the anaphoricity of the French Imparfait, we assume that when a state is described in null context, there is an expectation that a foreground (an event or a sequence of events) is to come in the stage thus set. Indeed, (1-a) can stand alone and make a very short discourse, while (1-b) cannot. So, state-describing clauses in a null context also introduce a forward-looking topic segment (an event clause) expecting to be elaborated by some other event clause, and the state clause is attached by *Background* to this topic.

We now further assume that “non-spanning” locating adverbials, like those seen above, require that the eventuality they locate be an event, in contrast with “spanning” locating adverbials, like those built with the preposition *depuis* (since), which require to be combined with states. The location relation involved in a non-spanning adverbial like *ce soir-là ou à 8h* is the temporal inclusion of the event in the time it refers to. This yields the standard interpretation of (1-a), even though the adverbial is IP-adjunct, because the main clause introduces an event and attaches to the topic with *Elaboration*, which also implies temporal inclusion, a transitive relation. When a non-spanning locating adverbial is IP-adjunct of a state-describing clause, as in (1-b), the main clause which introduces a state attaches to the topic (which is an event clause because of the adverbial) with *Background* instead (because of an ontological constraint of homogeneity imposed by the parthood relation in the semantics effects of *Elaboration*). This yields an overlap with the topic event, and so an overlap with the time *ce soir-là* refers to and in which the topic event is included, again recovering the standard interpretation. Note that the topic still expects some event-describing clause to elaborate it, which predicts that (1-b) cannot stand alone in null context.

Finally, to explain (2), we standardly [14, 8] assume that a perfect tense introduces both a past event and its resulting state. In a SDRT account, one eventuality must be identified
as the “main eventuality”\(^4\) and since authors consider that the resulting state is focused on, it would seem natural to have the resulting state as the main eventuality (at least by default), something adequate for the present perfect and the past perfect. For French Passé Composé and Plus-que-parfait, however, whether the main eventuality actually is the event or the resulting state is decided by the discourse context, as seen in (2-b), and thus left underspecified.

When in VP-adjunct position, the composition process enables the adverbial expecting an event to locate the event that will be provided by the tense, a process in which the main eventuality label plays no role. When in IP-adjunct position, the attachment depends on the selection of the main eventuality (which depends on the context): if the event is selected, the main clause will elaborate the topic segment generated by the adverbial, which is an event clause (because à 8h is non-spanning); if the resulting state is selected, the main clause will not elaborate the topic segment, it will attach by Background instead, with the expected semantic effects as above.

To sum up, our approach assumes a unique semantics for the adverbials and the tenses, and acknowledges the contribution of IP-level composition in discourse representation construction.

References


\(^4\)The main eventuality is a label on one eventuality of the segment, to be used at the semantics-pragmatics interface, i.e., at the discourse level. This label plays no role within the semantics of the segment itself.
CALCULATING THE EPISTEMIC EFFECT OF PAST MODALITY VIA $K$

Alda Mari¹ & Susan Schweitzer²,¹
1. IJN, CNRS/ENS/EHESS 2. CUNY

Data and previous proposals. In recent analyses of epistemic modals in the present and past in French, various authors have refuted the syntactic scope hypothesis (1-c) that the modal scopes above tense in the epistemic reading ([1]; [6]; [9]), and have made different proposals for modalities in the present perfect and the imperfective in French (and Dutch [1]). Here we focus on Italian (in comparison with French).

(1) a. Jean peut_{pres} avoir deplacé_{perfective} la table
   John could_{pres} have moved the table
b. Jean a pu_{presentperfect} deplacer_{imperfective} la table (EPISTEMIC / CIRCUMSTANTIAL)
   John might have moved the table / John could move the table
c. Epistemic : MOD > TENSE > P    Circumstantial : TENSE > MOD > P

The common assumption of ‘non syntactic scope’ approaches is that the meaning of tenses/aspects determines their interpretation. It has been proposed that for the imperfective epistemic modal pouvoir / can, tense scopes over the modal and refers to a past time at which different epistemic possibilities were available to the speaker (2-a) ([1]; [6]). This is argued to be the case in virtue of the fact that the imperfective is an anaphoric tense ([1]).

(2) a. (Context : Jack Bauer testifies before a commission ... The President was eventually released safe)
   Le président pouvait/devait_{imperfect} être déjà mort, donc j’ai appelé le vice-président
   The president could/must have been already dead, hence I have called the vice-president

This hypothesis does not seem to cover scenario (3) in Italian, where the options considered were not available to the speaker at the time they obtained (i.e. in the past).

(3) In a museum, in front of the very short bed of Louis XIV I can utter:
   Poteva essere particolarmente basso He might have been particularly short

Moreover, even postulating that the imperfective is anaphoric to the time at which the evidence holds, it remains to be explained why, in Italian, when the imperfective is combined with eventive predicates, present evaluation of the modality only leads to the counterfactual interpretation (4), whereas past evaluation is simply not allowed on an epistemic reading.

(4) (*)Poteva prendere il treno ! / He could take the train

As for epistemic modality in the present perfect (which has an epistemic reading in Italian only when combined with stative properties (5)(i.), lexicalist approaches (e.g. [10]) have argued that, for French, the present perfect is also a point of view aspect. This hypothesis encounters theoretical and empirical shortcomings : (i) if the tense is responsible for the epistemic interpretation of the modal, it remains unclear under what circumstances the abilitative interpretation of (1-b) arises, (ii) it does not cover a variety of data across romance languages which allow the epistemic interpretation of the modal in the simple past (5)(ii.); see also [8] for Spanish), which [10] does not consider to be a point of view aspect.

(5) (i) Ha potuto_{pres,perfect}  (ii) Poté_{simple,past} benissimo essere stato donato dal curatore stesso / It could well be
donated by the curator himself (Internet example, see also [9])

Here we argue for a formal semantic-pragmatic approach, according to which the epistemic interpretation of sentences with modals in the past (assuming that all heads are interpreted in situ) is derived by a computation of inferences, given the semantic material provided by the modal and its aspect, the embedded event (whether stative or eventive), assumptions about time, plus some constraints given by the model.

Analysis. We employ a $W \times T$ forward branching structure [2]. A three place relation $\simeq$ on $T \times W \times W$ is defined, s.t. (i) for all $t \in T \simeq$ is an equivalence relation ; (ii) for any $w, w' \in W$ and $t, t' \in T$, if $w' \simeq_t w$ and $t' \prec t$ then $w' \simeq_{t'} w$.

In words : any two worlds (which are maximal sets of times) overlap until they branch. We assume that $\tau(e,w)$ returns
the spatio/temporal trace of an event e in the world w. We also assume that the imperfect over the modal returns the set of times that extend from some point in the past to an unspecified subsequent time and that the present perfect and the simple past denote a bounded past period of time.

We examine four types of past possibility of a proposition φ as in (6-c)-((7-c)). For each of the two cases, the event in φ can be either eventive or stative, and can be scoped over by a modal that is either bounded or unbounded in aspect. The speaker can be in one of three epistemic states with respect to φ: i) he believes it obtained, ii) he believes it did not obtain, or iii) he has no view on the matter. We ignore the first possibility, as a speaker would conventionally express this as PAST φ (i.e. with no modal). We argue that the hearer can calculate which of the other two possibilities obtains as an implication of the form of the modal the speaker elects to use. In order to formalize the epistemic dimension of ii) and iii), we introduce an operator Kj with the intended interpretation ‘the speaker (j) believes that’ (see [5]), which is not part of the truth conditions (vs. [7]). We conventionally use ◊ to symbolize nomological possibility. We note that K is a factive operator (i.e. K[φ] entails φ in w, t ; consequently, K[◊φ] entails ◊φ in w, t). We write as φ\textit{bounded/unbounded} a proposition in which the eventuality is either bounded or unbounded.

When \textit{imperfect} aspect scopes above the modal, (6-c) applies.

(6) a. Mario potéva\textit{imperfect} prendere il treno / Mario could have taken the train - counterfactual/cumrnest.
   b. Mario potéva\textit{imperfect} star prendendo il treno / Mario could have been taking the train
   c. Speaker utters φ : φ = \lambda t \lambda w \lambda P \exists w' (t' < now \wedge w' \sim w \wedge \exists e (P(e) \wedge \tau(e)(w') \supseteq [t',...,]))
   Hearer : Kj[\lambda t \lambda w [[(\phi)]]^\mu^\tau] = 1 \text{iff } \phi \in (w,t)

The epistemic interpretation is unavailable when a possible past event is referred to using the imperfect (unbounded) (i.e. PAST(UNBND)(◊(φ\textit{bounded}))) as in (6-a). Note that the available readings are counterfactual or circumstantial. By his use of the imperfect aspect, the speaker fails in fact to state that the possibility (of φ) has a definite endpoint. He thereby conveys that an event in the past, which no longer has the possibility of occurring in the actual world (e.g. a train’s departure at a certain time), is still possible. The only option available to the hearer is to assume that the speaker is referring to a non-actual world where this possibility is still open. The hearer can thus calculate as follows: if the only way to make ◊φ true is to consider a non-actual world, then, assuming truth entails possibility, the speaker must believe that φ is not true in the actual world (Kj¬φ).

The case is different with stative verbs. When the utterance contains a stative verb under an imperfective modal, as in PAST(UNBND)(◊(φ\textit{unbounded}))) (6-b), the speaker’s utterance demonstrates that he believes it is still a possibility that the state had obtained. Statics, being unbounded, can hold on the whole path from ⟨(w′/w, t′)⟩ to infinity, hence the epistemic possibility is open at the reference time (which is the utterance time tₜ).

(The Italian version of) (2-a) is also calculated at tₜ where the issue is settled. The combination of tense and aspect does not by itself allow the calculation that the speaker knows ¬φ at w, t. In our system, φ is still possible in a counterfactual world where the president is dead, as the preference for the use of the conditional over the imperfect reveals.

When the \textit{present perfect} (see [9]) scopes above the modal (7-c) applies (see [9] for details and discussion).

(7) a. Mario a pu\textit{pres.perf} prendere le train / *ha potuto\textit{pres.perf} prendere il treno / He might have taken the train
   b. Mario ha potuto\textit{pres.perf} essere bello / He might have been handsome
   c. Speaker utters φ : φ = \lambda w \exists t,s [now \subseteq t \wedge Q(s,w) \wedge t \subseteq Q(s,w) \wedge t' < t \wedge \exists w' [R(w',w) \wedge \exists e (P(e) \wedge \tau (e,w') \subseteq [t',...,])] (see also [9]¹)
   Hearer : Kj[\lambda t \lambda w [[(\phi)]]^\mu^\tau] = 1 \text{iff } \phi \in (w,t)

In the case of the \textit{eventive} with a possibility modal under the bounded past (present perfect or simple past), as in (7-a), a different scenario emerges, represented as PAST(BND(◊(φ\textit{bounded}))) (a head PRES is added for the present perfect [11]). Since potere in Italian (7-a) is not allowed (see [4]), we show here how to extend the present approach to French, without assuming a specific lexical semantics of the present perfect as point of view aspect (the simple past in French would not have an epistemic interpretation due to the concurrence between the two tenses (see [11],[14]) ; also, we consider that the result state of the present perfect at PRES ([11]) plays the same contribution as the non-grammaticalized present argument of simple past ([13]), whose contribution is to provide an anchor to K ; see [4] and

¹[9] does not adopt a branching time framework, though
Here the speaker knows that the event is no longer possible in the current world and thus puts a bounded aspect on the modal of possibility. No implicature can be calculated about the speaker’s belief that $\neg \phi$, and as $\phi$ is also not implicated (see above), the hearer may thus conclude that the speaker’s epistemic state is impoverished, i.e. he has no belief that either $\phi$ or $\neg \phi$. In this scenario, the speaker holds both $\phi$ worlds and $\neg \phi$ worlds as candidates for the actual world. The inability to distinguish these worlds characterizes the speaker’s epistemic state at $t_\alpha$, and the hearer can derive $\neg K_j \phi \land \neg K_j \neg \phi$.

And finally, when the static verb is under the scope of a modal with bounded aspect (7-b) ($PAST\ (BND(\Diamond (\phi_{unbounded})))$), this feature of bounding forces the state to be bounded (we agree with [4] and [8] see also [9], although we do not admit that the modal outscopes tense). For example, in (7-b), the only reading of this sentence that is felicitous is if the speaker considers Mario to be dead, as in this case the state of his being handsome would necessarily have ended (Space limitations inhibit discussion of why the lifetime effect is allowed with ILP under modals, but not outside the modality ([9])). The mechanics of the interpretation applies as in (7-c).

**Selected references.**

'Descriptive' Indexicals
Julie Hunter

[5] and [2] have argued forcefully that so-called ‘descriptive’ uses of indexicals motivate a revision of standard indexical theories; [2] even uses these data to claim that demonstrative indexicals contribute definite descriptions to logical form. I contend, however, that these data are perfectly compatible with Kaplan-style theories of indexicals and in fact exhibit compositional, rather than character-level, phenomena. In this talk, I present an account of these compositional phenomena, which I call intensional reconstruction (IR) and quantificational coercion (QC).

The Data: IR can arise when an indexical interacts with an intensional operator and results in a descriptive reading of the indexical. Imagine (1) uttered by the current Speaker of the U.S. House.

(1) If more Republicans had won the last election, I might have been conservative.

The relevant reading of (1) can be roughly captured by replacing I with the definite description the Speaker of the House. QC can arise when an indexical interacts with a quantificational adverb and also results in a descriptive reading. Imagine (2) uttered on the Tuesday before Thanksgiving:

(2) Tomorrow is always the busiest day to travel.

It doesn’t make sense to make a habitual claim like (2) about a particular day; tomorrow in (2), like I in (1), is understood descriptively as the day before Thanksgiving. Correct analyses of (1) and (2) are not forthcoming from theories of indexicals, like [4], that hold that utterances of I and tomorrow must rigidly pick out the agent and day of the utterance, respectively.

My Proposal: While [4] and similar theories of indexicals cannot explain IR and QC data, [5] and [2] stray too far from these theories by underplaying the contributions of the indexicals in IR and QC data and mistakenly packing explanations of these phenomena into the semantics of indexicals. I argue that IR and QC are repair mechanisms triggered during the compositional process. Indexicals have the same sort of interpretations in IR and QC that they have in classical examples, contra [5] and [2], but in IR and QC, extra material is added around these interpretations at the level of logical form to repair clashes of type (QC) or semantic content (IR). (It is thus not surprising, or problematic, that theories like [4] fail to give an explanation of these phenomena.) Viewing IR and QC as compositional phenomena not only provides a better explanation of the data and more accurate predictions, it also highlights interesting distinctions between proper names and indexicals as well as plural and singular indexicals, which I will mention below.

In QC, a clash between the requirement of the quantificational adverb to have an argument of type (e → t) and the type of its (singular) indexical argument—type e—triggers a coercion in which an equivalence relation is introduced in order to construct a property. I understand coercion here not as shifting the meaning or type of the predicate or argument but as adding content around the argument in order to construct a term of a different type that allows the predication to work (cf. [1]). In (2), always wants a non-singleton set of times in its restrictor, yet it is offered only a single day t2, the value of tomorrow. This clash, shown in (a), licenses the construction of a property, shown in (b), so that always has a variable to bind, as in (c).

(a) ∀?(t2 is the busiest day to travel) — ‘?’ signifies that ∀ has nothing to bind

1I ignore here discussions of ‘deferred ostension’ in [5] and [2]. Deferred ostension is unlike IR or QC, does not motivate a descriptive theory of indexicals and works only for demonstratives, so it is not important here.

2(2) appears not to translate into French, though I have been told that similar examples with demonstratives work. For example, one can point at the Pope and say ‘C’est généralement un italian’ to say that the Pope is usually Italian. (1) seem less problematic for French speakers. As will hopefully become clear, these findings are consistent with my proposal that IR and QC are not character level phenomena and that IR happens at a more pragmatic level than QC. That true coercion of the form I argue takes place in QC is lexically specific has been argued in [1].
(b) \( \lambda P(P(t_2)) \Rightarrow \lambda P \forall x((x,t) \sim_p (t_2,t_c)) \rightarrow P(x) \)

(c) \( \forall t \forall x((x,t) \sim_p (t_2,t_c) \rightarrow x \text{ is the busiest day to travel at } t) \)

The property \( p \) in \( \sim_p \) is filled in by context. Due to the coercion in (b), always is able to quantify over a set of day-time pairs such that the day \( x \) has relative to \( t \) the property \( p \) that \( t_2 \) has relative to the time of utterance \( t_c \). Note that \( t_2 \) is present in logical form after the shift. Neither the meaning nor the type of tomorrow has changed—a property has been constructed around its interpretation.

An equivalence relation like \( \sim_p \) is already at work in standard uses of plural indexicals. Obama, for example, can say, ‘There have been 44 of us’ to mean that there have been 44 U.S. Presidents, even without an adverb of quantification. An utterance of we is constrained to pick out a group that includes its agent, but the other members of the group are determined by factors such as speaker intentions and conversational topic. In my talk, I argue that the interpretation of we is the group of individuals with the property \( \lambda x((x,t) \sim_p (a,t_c)) \) where \( a \) is the agent, \( r \) is a property variable filled in by context and \( t_c \) is the time of the context. Group membership may vary over time, hence the inclusion of the time variable \( t \), which can either be bound by an operator or given a value by context. When an adverb of quantification takes a plural indexical interpretation into its restrictor, there will be no type clash because the quantifier can exploit the \( \lambda \)-term of type \( e \rightarrow t \) above. The adverb quantifies over \( x \) in the logical form for we, so coercion is not required.\(^3\) If this theory of plural indexicals is correct, we see that singular indexicals in QC cases mimic plural indexicals; they require coercion to do so, however, because they do not offer sets to logical form.

IR data arise not from type clashes in predications, but from clashes in the broader discourse context. Note that an IR reading may not be preferred if we change the antecedent of (1): *If my parents had raised me differently, I might have been conservative*. The input context for an IR example provides a modal background for the evaluation of the example. The antecedent in (1) asks us to consider possible worlds that are just like the actual world save that more Republicans won the last House election. If *might* operates as a test on the modal background as in [6], the modal claim in the consequent should fail: the outcome of congressional elections should have no effect on the political tendencies of the actual House Speaker, so given that the Speaker is actually liberal, she should be liberal in each of the possible worlds under consideration. The discourse is predicted to be infelicitous, unless some sort of coercion is undertaken. By adding the equivalence relation \( \sim_c \) (for counterpart) to logical form, we can capture the intuitive reading of the example without meddling with the semantics of indexicals.

\[(1') \rightarrow \Diamond(\text{liberal}(a)) \] (Kaplanian interpretation, where \( a \) is the agent) \n\[(1'') \rightarrow \forall x(x \sim_c a \rightarrow \text{liberal}(x)) \] (1'') is the reconstructed logical form for the consequent of (1). It will be true just in case for some world \( w \), all individuals \( x \) that have the property \( c \) in \( w \) that \( a \) has in the actual world are liberal in \( w \). IR is licensed only when the Kaplanian indexical interpretation yields a logical form that clashes with what the conversational participants know, and take each other to know, about the world.

There are many reasons to think that IR and QC are not character-level phenomena. *Tomorrow* in (2) is context sensitive in the way Kaplan-style theories predict: it must be uttered two days before Thanksgiving in order to pick out the day before Thanksgiving, just as it must be uttered on Tuesday in order to pick out Wednesday. Similar remarks hold for I in (1). Further, indexicals in IR and QC cases can enter into co-predication and co-reference data in which they have both a standard and an IR or QC reading. Preserving the Kaplanian interpretation at the level of logical form as I do respects both of these points, which are lost in a descriptive theory like [5] or [2].

(3) I am liberal, but might have been conservative if the last election had gone differently.

---

\(^3\)Perhaps we should not include times in the logical form for we and leave \( t \) to be introduced through coercion. I am more concerned here with the claim that we has \( \sim_c \) built into its semantics while singular indexicals do not.
(4) Tomorrow is the day my sister arrives and, unfortunately, always the busiest day to travel. In (3)-(4), the first predication holds of the Kaplanian interpretation of the indexical. The second predication in (3), uttered by the House Speaker, concerns a different individual who is the Speaker in a non-actual possible world, and the second predication in (4) concerns a set of days—not only the day after the day of utterance—that share a salient property. Furthermore, character-level accounts of IR and QC overgeneralize; they predict descriptive readings to be possible in any context, whereas the data show that they are brought about only in special environments, such as those involved in IR and QC. Such accounts must also analyze referential uses as descriptive. My account, by contrast, allows for a unified treatment of indexicals without positing descriptive interpretations.

Further Remarks: IR and QC do not occur every time an indexical meets a modal operator or an adverb of quantification.

(5) About my 3rd court appearance for a speeding ticket: ?Tomorrow is always a stressful day. Many factors affect whether QC or IR are licensed, and it may not be possible to state them all. One factor that appears universal, however, is that both IR and QC exploit roles played by the individual picked out by the Kaplanian interpretation. In QC, the role must be one played by different individuals—different days, people, etc.—at different times and there must be an expectation that the role will be filled at fairly regular intervals. (The intervals need not be perfectly spaced in time; expected recurrence is what is important.) Thus, I can use tomorrow to talk about the day before Thanksgiving, but it is less felicitous when used to talk about the day that I have to go to court to defend my 3rd speeding ticket, even if tomorrow’s being a day on which I go to court is salient. (An example like this might be more felicitous if it was known by my addressees that I was a fast driver and they expected me to get tickets at regular intervals, however.) In IR, we do not need individuals to fill the role through time, but rather across the space of possible worlds. Another thing that is important for IR is for there to be a connection between the incoming context—the modal background—and the role that is to be exploited in IR. In (1), for example, the context created by the antecedent makes salient those worlds in which the election that led to Pelosi’s appointment turned out differently. This allows the move from Nancy Pelosi to her role as Speaker of the House and onto other individuals who might have filled this role.

Imperfectivity and Habituality in Italian

Fabio Del Prete
Institut Jean Nicod

The Phenomenon. Italian bare imperfective sentences allow for both habitual and progressive readings, according to whether the reference time is a large or a small interval (Bertinetto 1986). This is shown in (1a) for the Presente (Indicative Present), and in (1b) for the Imperfetto (Indicative Imperfect):

(1) a. (In questo periodo / In questo momento) Gianni viaggia in treno.
   In this period / In this moment Gianni travel(Pres, 3sg) in train
   ‘(Nowadays / At this moment) Gianni travels / is traveling by train.’

b. (In quel periodo / In quel momento) Gianni viaggiava in treno.
   In that period / In that moment Gianni travel(Imp, 3sg) in train
   ‘(During that period / At that moment) Gianni used to travel / was traveling by train.’

There is a puzzling contrast, however, between (2a) and (2b):

(2) a. (# In quel periodo / √ In quel momento) Gianni viaggiava su un treno InterCity.
   In that period / In that moment Gianni travel(Imp, 3sg) on a train InterCity
   ‘(During that period) Gianni used to travel on an InterCity train.’
   Habitual #
   ‘(At that moment) Gianni was traveling on an InterCity train.’
   Progressive √

b. (In quel periodo / In quel momento) Gianni guidava un’auto sportiva.
   In that period / In that moment Gianni drive(Imp, 3sg) a car sports
   ‘(During that period) Gianni used to drive a sports car.’
   Habitual √
   ‘(At that moment) Gianni was driving a sports car.’
   Progressive √

Both (2a) and (2b) are bare imperfective sentences with a singular indefinite embedded in their VPs. Sentence (2a), however, strongly prefers the progressive reading, as shown by the oddness of the time adverbial in quel periodo (which requires a habitual interpretation), while (2b) is fine on both the progressive and the habitual reading. If (2a) is accepted on the habitual reading at all, it is interpreted as implying that during the relevant past period Gianni used to travel on the same InterCity train. A similar effect is observed in (2b): on the habitual reading, the sentence implies that Gianni used to drive the same sports car.

I provide a solution to the above puzzle which is based on the semantic assumptions (A1)-(A3) and the pragmatic theory (A4):

(A1) Imperfective morphology contributes a forward-expansion of a reference situation in Branching Time (Deo 2009).

(A2) Verbs can inherently refer to pluralities of singular events (Krifka 1992, 1998, Landman 1996, Laca 2006, Kratzer 2008), where pluralities include singularities as special cases.

(A3) Singular indefinites are existential quantifiers over singular individuals, with scope bounded to the VP in which they are embedded (Diesing 1992).

(A4) Sentences can be odd because they have implications (in a wide sense, which covers both implicatures and entailments) that conflict with common knowledge (Magri 2009).

No one of the assumptions in (A1)-(A4) is new in itself. As far as I know, however, combining these assumptions to account for the above puzzle is something that has not been done before.

The covert quantifier analysis. On a quantificational analysis of their habitual reading, imperfective sentences involve a covert habitual quantifier, whose meaning and syntactic position in the sentence would be similar to the meaning and syntactic position of the quantifying adverb sempre ‘always’ in (3):

(3) Gianni viaggiava sempre in treno.
   Gianni travel(Imp, 3sg) always in train
   ‘Gianni always traveled by train.’

1 The same point holds for the corresponding examples in the Presente.
(3’) Always, [ϕ(s)] [∃e [Gianni-travel-by-train(e) ∧ Occur(e, s)]]

The Q-adverb ‘Always’ in (3’) is a binary universal quantifier binding a situation variable, and the formula ‘ϕ(s)’ provides its implicit restriction (Krifka et al. 1995). Accordingly, the interpretation of (3) is that for every situation s such that s is ϕ (where ϕ could plausibly be the property of being a situation in which Gianni is on travel), an event of Gianni traveling by train occurs at s. A major problem for this analysis is that if we insert sempre in (2a), the habitual reading becomes possible, as is shown by (4):

(4) (In quel periodo) Gianni viaggiava sempre su un treno InterCity.

‘(During that period) Gianni always traveled on an InterCity train.’

On the quantificational analysis, the contrast between (2a) and (4) is unexpected. What is unclear is why (2a), unlike (4), cannot mean that on every relevant situation Gianni traveled on an InterCity train, with the train possibly co-varying with the single traveling episodes.

The proposal: the semantic model. First, I propose a variant of Branching Time, which I call Partial Branching Time (PBT). PBT is based on Kratzerian situations: instead of having moments (i.e. instantaneous events maximally extended through space) as basic elements partially ordered by temporal precedence, PBT has situations. The central idea of Branching Time is extended to PBT: every situation has a unique past and many possible futures. Further, I assume event structures with plural events as in Krifka (1998), the main difference with respect to Krifka being that my event structures incorporate PBT structures, not linear time structures. The temporal trace function τ maps any event e onto the minimal situation s at which e occurs. Temporally discontinuous (plural) events and situations are allowed. In particular, if e is a temporally discontinuous plural event, τ(e) will be a temporally discontinuous plural situation. Given the possible discontinuity of s’, the relation of temporal inclusion s ⊆ s’ will not require that s’ be a mereological part of s’, but only that the left boundary of s’ temporally precede the left boundary of s and the right boundary of s temporally precede the right boundary of s’.

The proposal: the semantic analysis. On the analysis that I propose, Presente and Imperfetto only differ from each other with respect to their tense properties, while they share the same imperfective feature IMPF, whose entry is given in (6) below. To model the semantic contribution of IMPF, I make use of two formal concepts: (a) an operation f-exp(s) which expands a situation s forward in PBT (this effect is represented in Fig. 1 below), and (b) a topological operator THR (read ‘throughout’) which takes an event property P and a (branching) situation s and “spreads out” P over s, in the sense defined in (5) below.

Fig. 1: forward-expansion of s₀ in PBT

(5) THR(P, s) iff ∀b [b ⊆ s → ∃e [P(e) ∧ b ⊆ s τ(e)]]

(6) [[[IMPF]]] = λs. λP. THR(P, f-exp(s))

[b is a branch of s, i.e. a sub-situation of s which lives in a single world-history; the branches of s represent expected continuations of the initial part of s.]

Given (A2) and (A3), the VP ‘Gianni drive a car’ has the denotation in (7), where e can be either singular or plural. Crucially, if e is plural, the same car x is identified as the theme argument of all singular sub-events of Gianni driving a car.

(7) [[[Gianni drive a car]]] = λe. ∃x [car(x) ∧ drive(e, Gianni, x)]

Let’s go back to sentence (2b). Its LF is (2b’), which corresponds to the truth-conditions in (2b”):²

² The condition ‘s <ₜ now’ in (2b”), by which the reference situation s has to precede the situation of utterance now, is a presupposition determined by the past tense of the Imperfetto.
(2b')   PAST[IMPF[[un’auto sportiva], [Gianni guidare x]]]

(2b'') [s < now] ∀b [b ⊆ S ƒ-exp(s) → ∃e ∃x [sports-car(x) ∨ drive(e, Gianni, x) ∧ b ⊆ τ(e)]]

If s in (2b'') is a large situation, as required by the adverbial in quel periodo, the forward-expanded situation ƒ-exp(s) is also large. In order for any branch of ƒ-exp(s) to be included by the temporal trace of an eventuality e of Gianni driving a sports car, e must be a plural event made up of singular events of Gianni driving a sports car. A plurality of such singular events is spread out over the reference situation and its expected continuations, and the resulting reading is that Gianni habitually drove a certain sports car, which is predicted to be the same across the singular sub-events. If s in (2b'') is a small situation, as required by the adverbial in quel momento, the branches of the forward-expanded situation ƒ-exp(s) may be included by the temporal trace of a singular event of Gianni driving a sports car. The natural choice for instantiating the Davidsonian quantifier is indeed a singular event in this case, which is spread out over the reference situation and its expected continuations. The resulting reading is that a singular event of Gianni driving a sports car was in progress at s. Notice that the analysis does not have the unintuitive side effect that the sports car may vary with each branch b of ƒ-exp(s): the reference situation s itself has to be included by the trace of the event e having car x as its theme, and this implies that there must be a part of e which has already occurred at s, so that the car x involved in this part of e is the same which is expected to be driven in the continuations of s.

The semantic analysis (A1-A3) and the pragmatic theory (A4) jointly explain why (2a) is odd on the habitual reading: if s is a large situation, in order for any branch of ƒ-exp(s) to be included by the temporal trace of an eventuality e of Gianni traveling on an IC train, e must be a plural event of Gianni traveling on an IC train, with the train being the same across the singular sub-events of the same type. But the proposition that Gianni habitually traveled on the same IC train conflicts with common knowledge: people who are used to travel by train normally travel on trains which differ across different traveling episodes. This explains why (2a) sounds odd on the habitual reading.

Conclusion. This paper provides a unified analysis of progressive and habitual readings of Italian bare imperfective sentences, in an event framework with PBT. On the proposed analysis, the difference between the two interpretations is related to the distinction between singular and plural events (Ferreira 2005): bare imperfective sentences are non-quantificational, while they involve plural events on their habitual reading. The analysis explains why a bare imperfective sentence with a singular indefinite embedded in its VP implies that the referent of the indefinite is the same across different episodes. This effect would be difficult to explain on a theory relying on a covert habitual quantifier. The oddness of the habitual reading of imperfective sentences like (2a) is explained on the basis of a mismatch between their implications of uniqueness and common knowledge.

French Modals and Perfective Aspect: A Case of Aspectual Coercion
Vincent Homer, UCLA & ENS
Keywords: French, Modal, Aspect, Coercion

1. The Puzzle. Bhatt (1999) and Hacquard (2006) claim that in French, the complement of a root modal verb (which can be deontic (2), pace Hacquard) must hold in the actual world (1a), iff the Viewpoint-Aspect on the modal verb is perfective (i.e. when the morphology is passé composé): this is called an actuality entailment (AE).

2. A previous analysis. Noting the difference between (1a) and (3) (the AE is necessary in the former and only possible in the latter), Hacquard (2006) analyzes the phenomenon as syntactic and as a result of the binding of the world argument of Asp (which is an event quantifier) by the matrix world binder: sentence (1a) asserts the existence of an actual event which also takes place in some or all accessible possible worlds.

3. The proposal. a. Contrary to Hacquard’s claim that the ‘actuality entailment’ is not cancelable, there are a number of contexts (some noted in Mari&Martin 2007) where the AE is still possible but no longer necessary, so that one can use a continuation which is incompatible with the actualization of the complement of the modal, viz. contexts where moments are quantified over (4a) and (5) (compare with (6)). Two analytical options arise, both incompatible with Hacquard’s proposal: (i.) the phenomenon in (1a) is pragmatic, and it is either cancelled or obfuscated by additional inferences in the presence of a quantification over times in (4a)-(5), or (ii.) the difference between (1a) and (4a)-(5) is a structural one (we defend this option and show that the contrast is due to the presence/absence of operators which are sensitive to quantification over times). To adjudicate on the case, we use a Gapping test: in (7), the first conjunct contains a quantifier over times, whereas the second has a definite description instead; the ellipsis site cannot contain a quantifier over times, so that the second conjunct is strictly parallel to our baseline sentence (1a). Now, it is impossible to understand that the second prisoner did escape. The sentence means that there have been several occasions upon which the first prisoner was in a position to escape for the first time, and the same held of the second prisoner on the last day of March. So (i.) the presence of a root modal in the scope of a perfective operator doesn’t suffice for the ‘actuality entailment’ and (ii.) the mechanism which precludes this inference in both conjuncts is syntactic (mixed readings are impossible). b. We also note that modal verbs are stative (they are predicate of eventualities such that every proper part of an eventuality in their denotation is homogeneous to the whole); and Pfv selects for bounded predicates of eventualities, i.e. predicates such that no proper parts of the eventualities in their denotations are homogeneous to the whole (Swart 1998, Bary 2009 a.o.), hence the aspectual clash illustrated in (9a). When proper time adverbials are inserted, as in (9b) and (9c), new interpretations become available because so-called coercion operators are licensed (Bary 2009). The MAX operator present in (9b) selects a stative predicate P and returns a predicate of maximal P eventualities, giving rise to a complexive interpretation; it is licensed by modifiers such as à un moment donné ‘at some point’, à plusieurs reprises ‘on several occasions’, etc. that is, by modifiers which make AEs optional (cf. (4a) and (5)). The INGR operator present in (9c) selects a stative predicate P and returns a predicate of minimally short P eventualities initiating an indefinitely long P eventuality: this achieves the inchoative interpretation licensed by soudain ‘all-of-a-sudden’. Root modals are coercible along the exact same lines, cf. (11a)-(11b) which have a complexive and an ingressive reading respectively. The fact that root modals are sometimes coerced entails that they do not by themselves fulfill the selectional requirements of Pfv, so that whenever they appear under Pfv, they are in fact coerced (i.e. turned into bounded predicates.
by some coercion operator). The question is then: why kind of coercion occurs in the baseline sentence (1a)? The answer comes from stative predicates such as the \textit{house cost} \texteuro{}100,000:\ contrary to \textit{Jean être en colère}, they can appear in the perfective without any particular time adverbials; but interestingly, the reading is one in which the existence of some event pragmatically related to the stative predicate is asserted. In the case at hand, (12a) says that the house cost \texteuro{}100,000 and that it was sold for that price (or that the price for building it was \texteuro{}100,000); the phenomenon only occurs in the perfective (witness (12b)). Similarly, (13a) doesn’t just say that Jean was tactful yesterday (the way (13b) does): it says that he did something tactful yesterday. We propose to label this type of coercion supervenient, as it asserts the existence of a pragmatically determined event supervening on an existing state: this is the output of the \textit{SUP} operator (14). The output of \textit{SUP} is a pragmatically determined event causally related to the stative predicate which serves as its input. In (1a), only the supervenient interpretation is available, in the absence of licensers of the complexive or of the ingressive interpretations. The second conjunct of (8) (as well as (11a)) is ambiguous between the complexive interpretation (licensed by the quantifier) and the supervenient one (which doesn’t require any particular adverbial and is therefore available as a default): therefore using a presupposition trigger such as \textit{à nouveau} ‘again’ doesn’t lead to any infelicity; although a licenser of the complexive interpretation is present in (7), the second conjunct is not ambiguous, because the insertion of \textit{SUP} leads to a nonsensical reading due to \textit{pour la première fois} ‘for the first time’. In sum, AEs are an instantiation of a broader phenomenon, i.e. the supervenient coercion of stative predicates. Lastly, the discrepancy between (1a) and (3) can be explained: the verb \textit{avoir} ‘have’ is special in that it can form bounded predicates of eventualities without aspectual coercion. It is indeed easily interpreted as meaning ‘get’, ‘obtain’ cf. (15). This interpretation is exemplified in (3) alongside the supervenient interpretation: the former allows the continuation in (3b) while the latter allows the continuation in (3c).

(1) a. Hier Max a pu s’évader de sa cellule, #mais ne l’a pas fait.
   ‘Yesterday Max has been able to to escape from his cell, but he didn’t escape.’

(2) Autorisée par mon nutritionniste, j’ai pu manger de la viande à mon mariage, #mais je ne l’ai pas fait.
   ‘Authorized by my nutritionist, I have can.PASTPART eat meat at my wedding, but I NEG it have NEG done.’

(3) a. Hier Max a eu la possibilité de s’évader de sa cellule.
   ‘Yesterday Max has had the possibility to escape from his cell.’

(4) a. Chaque fois que le prisonnier a pu s’évader, il ne l’a pas fait : il a préféré rester dans sa cellule.
   ‘Each time that the prisoner has can.PASTPART escape, he NEG it has NEG done: he has preferred stay in his cell.’

(5) À plusieurs reprises/Une fois, le prisonnier a pu s’évader, mais il ne l’a pas fait : il a préféré...
rester dans sa cellule (At several times/One time the prisoner has can.PASTPART escape, but he NEG it has NEG done: he has preferred to stay in his cell).

(6) #Tous les prisonniers qui ont pu s’´evader sont toujours dans leur cellule (All the prisoners who have can.PAST PART escape are still in their cells).

(7) —Ce prisonnier a pu s’´evader pour la premi`ere fois tous les soirs de f´evrier, et cette prisonni`ere, le dernier jour de mars. (This prisoner has can.PASTPART escape for the first time on every evening of February, and this prisoner.FEM on the last day of March).
—#Elle s’´evadera `a nouveau si n´ecessaire. (She will escape again if necessary)/Mais elle a pr´ef´er´e rester dans sa cellule (But she has preferred to stay in her cell).

(8) —Ce prisonnier a pu s’´evader tous les soirs de f´evrier, et cette prisonni`ere, le dernier jour de mars (This prisoner has can.PASTPART escape on every evening of February, and this prisoner.FEM on the last day of March).
—Elle s’´evadera `a nouveau si n´ecessaire. (She will escape again if necessary)/Mais elle a pr´ef´er´e rester dans sa cellule (But she has preferred to stay in her cell).

(9) a. #Jean a ´et´e en col`ere cet apr`es-midi (J. has been angry this afternoon).
   b. `A plusieurs reprises, Jean a ´et´e en col `ere cet apr `es-midi (On several occasions, Jean has been angry this afternoon).
   c. Soudain, Jean a ´et´e en col `ere cet apr `es-midi. (All-of-a-sudden, Jean has been angry this afternoon).

(10) a. $[\text{MAX}]^g = \lambda P_v \lambda e_v : P(e) \land \forall e' [e \sqsubseteq e' \rightarrow \neg P(e')]$
   b. $[\text{INGR}]^g = \lambda P_v \lambda e_v : \exists e' \tau(e) = t \land P(e') \land \neg (\exists t' \exists e'' t \sqsubseteq t' \land t' = \tau(e''))$.

IB maps an interval t on the latest moment just before t. (after Bary 2009)

(11) a. `A un moment donn´e, le prisonnier a pu s’´evader, mais ne l’a pas fait (At some point, the prisoner has can.PASTPART escape, but hasn’t done so).
   b. Soudain, le prisonnier a pu s’´echapper, mais ne l’a pas fait (All-of-a-sudden, the prisoner has can.PASTPART escape, but hasn’t done so).

(12) a. La maison a coˆut´e 100 000 € (The house has cost.PASTPART €100.000).⇝It was sold.
   b. La maison coˆutait 100 000 € (The house cost €100.000).̸⇝It was sold.

(13) a. Jean a eu du tact hier (Jean has had tact yesterday).⇝He did something tactful.
   b. Jean avait du tact hier (Jean was tactful yesterday).̸⇝He did something tactful.

(14) $[\text{SUP}]^g = \lambda P_v \lambda e_v . Q_i(e) \land Q_i(e) \iff \exists e' P(e') \land \forall e'' \text{ if } e'' \sqsubseteq e \text{ then } \neg Q_i(e'')$

(15) On a son bac `a 18 ans (One obtains their A-levels at 18 years old).

1. Introduction
Through the examination of floating numeral quantifier (FNQ) constructions in Japanese, this paper argues that much more serious attention needs to be paid to prosodic structure than usually exercised in conducting tests for judgements and interpretations (Fodor 2002; Kitagawa and Fodor 2006). We propose a prosodic account that explains in a straightforward way the FNQ constructions as instances of focal/informational structures. In recent studies working on syntax and semantics of Japanese quantifier float, Nakanishi (2007, 2008) reports prosodic effects as given in (1) (see also Kitagawa and Kuroda 1992; Fujita 1994; Kobuchi 2003). She notes (1) is ambiguous between distributive (1a) and non-distributive (or collective) (1b) readings without a boundary, whereas it only allows a distributive reading with a boundary (1a) (A quantifier is in italic and its host noun in boldface. The abbreviation CL stands for classifier. “//” indicates a (long) pause, corresponding to a prosodic boundary.)

(1) [Gakusei ga] (//) go-nin tsukue o mochiage-ta. (FNQ)
student NOM five-CL desk ACC lift-Past
(a) ‘Five (of the) students lifted a desk (individually).’ [Distributive]
(b) ‘Five students lifted a desk (together).’ [Non-distributive]
(2) [Go-nin no gakusei ga] tsukue o mochiagetara. (Non-FNQ) (=(1))
five-CL GEN student NOM desk ACC lifted [Distributive] / [Non-distributive]

Restricting our attention to the Subj-NQ pattern like (1), we claim that FNQ sentences are potentially ambiguous between (i) the event-related reading (VP-FNQ), and (ii) the object-related reading (NP-FNQ) where possible. With regard to the FNQ construal, a preferred reading is thus selected with the help of prosody (in accordance with the information structure) from a set of readings available in the discourse (e.g., distributive, partitive). Silent reading of (1) and other written sentences in this work may permit a different range of FNQ interpretations from actually pronounced examples, but that range is still controlled by prosody (cf. Kitagawa and Fodor 2006).

2. Some issues of the interpretation of Japanese FNQs
There have been two major contradictory views concerning Japanese FNQs. One is that the FNQs observe syntactic locality (mutual e-command) with its associated NP (Haig 1980; Kuroda 1980; Miyagawa 1981; Miyagawa and Arikawa 2007), the other is that FNQs are predicate modifiers and free from such locality (Kuno 1978; Fukushima 1991; Gunji and Hashida 1998; Takami 1998; Kobuchi 2003; Nakanishi 2007, 2008). The current study assumes that both insights are to be bonded to each other for the purpose of meeting the need for the adequate analysis of Japanese FNQs. What needs to be considered is the fact that in some contexts FNQs produce event-related readings, and in others they produce object-related readings. Assuming a tripartite structure for quantification; Quantifier(Restriction)(Scope) (cf. Heim 1982), semantic representations of (1a-b) would look like (3a-b).

\[ R \rightarrow S \]

(3) a. [five \( x : \) student(\( x \)) \& \( \text{lift.a.desk}(x) \) \( = \) (1a))
   b. [five \( x : \) lift.a.desk(\( x \)) \& student(\( x \)) \( = \) (1b)]

In our account, FNQ sentences, unlike the common assumption, do not necessarily force a distributive interpretation in terms of reference to objects (agenthood) or events (temporal relation). Under the latter definition, in Kitagawa and Kuroda’s (1992) sense, the distributive property necessarily implies the occurrence of multiple events, while the non-distributive construal implies the occurrence of only a single event as in (4b) (see Nakanishi 2007, 2008 for a contrary view). Their observation seems correct and deserves careful attention.

(4) a. Kono isshuukan no aidani shuujin ga san-nin nigedashita. [Distributive]
this one week GEN during prisoner NOM 3-CL escaped
‘There have been three jailbreaks this week.’

b. Sonotoki totsuzen shuujin ga san-nin abaredashita. [Non-distributive]
then suddenly prisoner NOM 3-CL started to act violently
‘Then, a group of three prisoners suddenly started to act violently.’ (Kitagawa and Kuroda 1992)
The generation of non-distributive interpretations, as shown in (1b) and (4b), strongly indicates that the account assuming that the FNQ obligatorily functions as a verb modifier, yielding distributivity (as the default reading) needs to be modified before it is able to incorporate these facts (and other examples below).

3. Prosodic cues

The degree of unacceptability of non-distributive interpretations of FNQ sentences seems to vary (slightly) among speakers, presumably because the reading is probably (a bit) more marked in that it requires much more contextual framing to be felicitous and the NP-FNQ often appears to have an ‘echoic’ flavour. (It is then likely that Japanese FNQ is ambiguous between the definite/referential and the existential interpretations.) Even so, there is a natural reading of non-distributive FNQs in examples such as (5) (where the acceptability judgement is Nakanishi’s based on the assumption that the distributive reading is not available).

(5) *Kodomo ga kinoo san-nin sono inu o koroshita.
children NOM yesterday 3-CL that dog ACC killed
‘Three children killed the dog.’ (Nakanishi 2007, 2008)

As Miyagawa and Arikawa (2007) note that the acceptability judgment of sentence (5) greatly improves, if a pause is put immediately after the NQ. This can translate to that a strategy to avoid infelicitous readings is to try forming a single (downtrend) intonational domain of the NQ and its associate NP (indicated by shade as in Kodomo ga kinoo san-nin), so that the NQ will not exhibit a pitch reset (but show a deaccenting), hence a contextually appropriate interpretation is available. Due to the lowering of the phrase, a non-distributive reading obtains in (5) where the denotation of the predicate is considered a singleton.

To see further a sensitivity of prosodic phrase to information structure, consider the discourses in (6) illustrating a VP-FNQ (6a) and a NP-FNQ (6b). For convenience, we adopt Steedman’s (2000) informational dichotomy using theme/rheme sentence-structure assignment, accommodating a possible distribution of focus (marked by pitch accent)/background (unmarked by pitch accent or boundary) components along with possible prosodic events (e.g., downtstep and pitch reset). We emphasize that the FNQ interpretation is largely determined by the context of use, and how this process works and its interpretation often relies on prosodic realization, which delineates its information status; for instance, focus and non-focus, as shown in (6a-b). The data also shows that the assumption that in the FNQ construction the host NP must be topic in the sentence (Takami 1998) is not correct. Note especially that in (6b) a (long) pause can intervene between the NQ and its host NP, where a new independent pitch range has not been chosen at the intermediate phrase boundary before the NQ; hence the two are phrased together, constituting a single intonational domain.

(6) (Single prosodic units are indicated by shade. “!” and “|” indicate a pitch reset and downtstep, respectively.)

a. Q: I heard that some men who happened to be there got involved in terrorism. And how many got involved in it?

men who happened to be there NOM 6-CL in terrorism got involved

[!show Focus ]
[!show Focus ... ]

‘Six (of the) men who happened to be there got involved in terrorism.’

A pitch reset is observed on the NQ roku-nin ‘six-CL’.
b. Q: I heard that six people got involved in terrorism. And who was it that got involved in it?
A: 

\[
\text{Soko-ni iaweseta otokó ga} \ (//) \ \text{rokó-nin téroni makikomáre}ta. \\
\text{men who happened to be there} \quad \text{NOM} \quad 6-CL \quad \text{in terrorism} \quad \text{got involved}
\]

The F0 peak on the subject NP is raised (optionally), and the post-focal material is compressed (obligatorily).

The generalization that follows would be that NP-FNQs can only get a contextually appropriate interpretation if they can have the F0 peak on the NQ lowered (compressed). Thus, we can say that, in actual speech, information structure is reflected in changes in pitch register scaling (e.g., downstep or pitch reset) of prosodic domains (cf. Féry and Ishihara 2009). Crucially, this is different from the claim that the presence of a prosodic boundary affects the focus interpretation: It is true that the different interpretations are often explained by ascribing to the insertion of a prosodic boundary (cf. Pierrehumbert and Beckman 1988, Kubozono 1993). However, it is not sufficient, as (6b with a (long) pause) exhibits a distinctive prosodic event involved in the construction: an initial F0 compression after the boundary (see the figure on the right). This might be analysed as grammaticalized ‘continuation fall’ contours, reflecting the speaker’s intentions with regard to the theme-rheme articulation of his/her utterance. In this connection, the difference in phrasing here seems insensitive to the edges of major syntactic phrases, but rather to a higher level difference of whether or not the NQ belongs to the same prosodic unit as the subject NP it is modifying. It is not clear how a theory making reference to edges of syntactic maximal projections (Selkirk and Tateishi 1991), as it is, accounts for the above intonational (and interpretive) differences.

4. Summary
It seems reasonable to conclude that the difference in intonational phrasing crucially lies in the information structure. Hence, in terms of the information-based prosody, local NP-related FNQs and non-local NP-related ones may be substantially identical if a FNQ can form a single phrase (or prosodic constituent) with the host NP despite the difference in the surface structure (or morphosyntactic constituent). This finding also suggests that a FNQ should be defined as an instance of expressing a discourse relation. Although the exact implementation remains to be worked out, we have seen that there is a correlation between prosodic phrasing and interpretation such that each phonetic realization (e.g., distinctive pitch patterns) as a consequence of information partitioning often serves to determine the preferred interpretation in the discourse.

Selected References
Do elided constituents really exist in unembedded quantifiers?

Yukio Furukawa

An unembedded quantifier, which is isolated in a conversation initial position (see the utterance in (1)), raises a philosophically intriguing question: is it meaningful in isolation?

(1) situation: There are some empty seats around a table, and then, pointing at one, I say,

An editor of Natural Language Semantics (Stainton 1998)

Stainton (1998) argues that it is meaningful. He claims that (1) can, by itself, express a propositional meaning such as ‘the unoccupied seat is reserved for an editor of Natural Language Semantic’: although (1) is not uttered as a sentence, it can be falsified e.g. if the seat is reserved for Emmon Bach. On the other hand, Stanley (2000) argues that the propositional meaning of (1) is not due to the meaningfulness of the unembedded quantifier, but due to syntactic ellipsis. He claims that a quantifier phrase has no meaning in isolation: although, apparently, it is not uttered as a sentence, its missing piece (either an open proposition or a predicate) covertly exists. It seems that (1) does not provide any decisive evidence for the debate between the direct interpretation analysis (the former) and the syntactic ellipsis analysis (the latter).

I suggest that unembedded ‘negative’ quantifiers provide decisive evidence for the debate. Especially, I focus my attention on two quantificational expressions that exhibit so-called ‘negative concord’, i.e. KANENAS in Greek and ni-kogo in Russian. Previous research about negative concord observes (i) that they require clause-mate sentential negations (see (2)), but nevertheless, (ii) that they can be isolated as fragmental answers.

(2) a. KANENAS *(dhen) ipe TIPOTA. Greek
   nobody NEG said 3SG nothing
   ‘Nobody said anything.’ (Giannakidou 2000)
   b. Ja *(ne) videl ni-kogo. Russian
   I NEG saw no one
   ‘I saw nobody.’ (Watanabe 2004)

In fact, however, their isolations are not restricted to fragmental answers; they can be isolated in conversation initial positions as shown in (3) and (4), and convey propositional meanings that may be equivalent to the propositional meanings of their fully sentential counterparts. (NB. Just for the purpose of comparison, I add the cases of English nobody and the cases of Japanese dare-mo to the following examples.)

(3) situation: Mary is a TA. Today, since she had to teach, she went to her classroom. Since it was her first tutorial, she expected every student’s participation. When she opened the door, however, she found that no one/student was there. Then, she said,

Greek a. KANENAS! a’. Dhen iparxei KANENAS!
Russian b. #Ni-kogo! b’. Ni-kogo net!
English c. Nobody! c’. There is nobody/Nobody is here!
Japanese d. #Dare-mo! d’. (Dare-mo) i-nai!
(4) situation: Basically the same as (3), but, this time, her expectation was weak, since it was almost the end of the semester. She expected that not all students were present, in other words, she expected absence of some students.

Greek a. KANENAS! a′. Dhen iparxei KANENAS!
Russian b. Ni-kogo! b′. Ni-kogo net!
English c. Nobody! c′. There is nobody/Nobody is here!
Japanese d. #Dare-mo! d′. (Dare-mo) i-nai!

KANENAS can be isolated in the conversation initial position under the context of (3). Felicity in (3a) suggests that the syntactic ellipsis analysis loses in this case. Suppose, for a moment, that (3a) involved syntactic ellipsis. If isolations in (3) involve syntactic ellipses and have antecedents to recover their missing pieces, due to absence of previously uttered texts, their antecedents cannot be parts of the previous texts but rather ‘contextual’ (or at least unarticulated) antecedents. Since its previous context (in the expectation world of the speaker) is roughly ‘for every student, s/he is present’ and every proposition entailed by it is nonnegative, no negative proposition/predicate that could be an antecedent for its missing piece would be available. However, if such a nonnegative proposition/predicate were recovered as its missing piece, the clause-mate condition (2a) would be violated. Therefore, it is impossible to recover its missing piece, and it is concluded that its propositional meaning is not due to syntactic ellipsis, but due to its own meaningfulness of (3a).

Contrary to KANENAS, isolation of ni-kogo exhibits varieties of felicity, as shown in (3b) and (4b). These differences about (in)felicity suggest that the syntactic ellipsis analysis wins in the case of unembedded ni-kogo. As indicated by the fully sentential counterparts (3b′) and (4b′), the propositional content intended by isolated ni-kogo is invariable in both (3b) and (4b). Moreover, this propositional content itself is felicitous under both contexts, as shown by felicitous (3b′) and (4b′). If isolated ni-kogo could, by itself, convey this propositional meaning, both (3b) and (4b) should be felicitous since both (3b′) and (4b′) are felicitous under both contexts. Nevertheless, only (4b) is felicitous which is not predicted by the direct interpretation analysis.

(5) situation: the same as (3):

Russian a. Ni-kogo? a′. Ni-kogo net?
English b. Nobody? b′. Is there nobody/is nobody here?
Japanese c. #/??Dare-mo? c′. (Dare-mo) i-nai no?

(6) situation: the same as (4):

Russian a. Ni-kogo? a′. Ni-kogo net?
English b. Nobody? b′. Is there nobody/is nobody here?
Japanese c. Dare-mo? c′. (Dare-mo) i-nai no?

Interestingly, if its isolation is a question, it becomes felicitous even under the same context as the context of (3) (see (5a)). Felicity in (5a) suggests that necessity for sentential negation in (2b) is not due to a morph-syntactic reason such as agreement. Again, since the previous context only provides nonnegative antecedent, it is impossible to recover its missing piece with sentential negation in (3b) and (5a). Nevertheless, (5a) is felicitous. I rather claim that sentential negation is semantically necessary in (2b) to convey the intended negative meaning since ni-kogo does not entail negativity. Infelicitous (3b) also supports this claim: if ni-kogo were negative, its infelicity would be hardly predicted.

I claim that ni-kogo is a scalar implicature item such as ‘even one person’ that strengths and widens the inference ‘there is at least one student that is not present’. The only difference between the context of (3) and the context of (4) is that only in the latter is this inference available to recover the
elided material of isolated *ni-kogo*. Therefore, only (4b) is felicitous. I further claim that the reason why (5a) is felicitous is due to the semantics of a yes-no question. Suppose (i) that a yes/no question denotes a set consisting of its yes-answer and its no-answer (see (7)), and (ii) that a yes/no question is definable only if at least one of its members is definable. (NB. Following Guerzoni 2004, a question denoted by e.g. (5a)/(6a) should be described in two ways depending on the scope relations between the scalar implicature item and the question operator.)

(7)  

a. \{[[ni-kogo]]([P])=1, ¬[[ni-kogo]]([P])=1\} (for \(Q>ni-kogo\))  
b. \{[[ni-kogo]]([P])=1, [[ni-kogo]]([¬P])=1\} (for \(ni-kogo>Q\))  

where \(P = ¬\text{present}(x)\)

Clearly, the no-answer of (7b), i.e. \([ni-kogo][[¬P]]=1\), is recoverable from the context of (3), and hence, (7b) is definable as a question. Remarkably, (5a) is a biased question that is characteristic to a question with a scalar implicature item. Guerzoni (2004) observes that negative bias in a question arises if the scalar implicature item takes a wider scope than the question operator. This nicely fits in the felicity of (5a) and its biased reading. In any case, since *ni-kogo* does not entail negativity, I claim that its isolation necessarily involves syntactic ellipsis whose elided material provides negativity. Otherwise, its isolation fails to convey the intended negative meaning.

References
Exclamatives have a question semantics!

Anna Chernilovskaya
Utrecht Institute of Linguistics OTS, Utrecht University

Abstract In this paper I compare two different approaches to the semantics of wh-exclamatives on the basis of their empirical coverage and principal assumptions. The first one considers exclamation to be fundamentally a degree phenomenon, whereas the second one notices a resemblance between wh-exclamatives and wh-questions and derives meanings of the former from meanings of the latter. I argue in favour of the second approach and make a proposal along the lines of d’Avis (2002). I show that with minimal additional assumptions, d’Avis’ approach captures readings involving degree. Moreover, the proposal allows to explain the fact that some wh-exclamatives from languages other than English have so-called individual readings, which are excluded by the degree approach.

Matrix wh-exclamatives are clauses like (1):

(1) How tall John is!

(1) is usually claimed to express speaker’s surprise at the degree to which John is tall. There are two major directions in describing semantics of wh-exclamatives. The first one (Castroviejo Miró (2006), Rett (2008)), the degree approach, observes that there is always a gradable property underlying a wh-exclamative (e.g. “tall” in (1)). This property can also be provided by a context. For example, when the speaker expected Mary, who is American, to speak only English and is surprised that she also speaks exotic languages (Afrikaans and Swati), the use of (2) is felicitous:

(2) What languages Mary speaks!

(2) does not contain an overt gradable predicate, but the salient gradable property of exoticism can be covertly inserted giving rise to “What exotic languages Mary speaks!”.

The degree approach predicts that (2) does not have a so-called individual reading. A scenario supporting the individual reading of (2) suggested in (Rett, 2008) would be: the speaker knows that Mary speaks two Romance languages, and that her mother is Swiss, so he expects these two languages to be French and Italian. However, the speaker learns that Mary speaks Portuguese and Romanian instead. Therefore, (2) cannot be used to express speaker’s surprise that Mary speaks two particular languages because they are different from what he expected. The reason for this is that in this context there is no salient gradable property (insertion of the property “unexpected” is explicitly prohibited in the degree approach).

The second prediction of the degree approach is that wh-exclamatives introduced by wh-words not ranging over degrees (like “who”) are ungrammatical as they cannot denote a gradable property, as (3) shows:

(3) *Who I have just seen!

However, I suggest that these two predictions are also limitations for the degree approach. First, I observe that in some languages there are wh-exclamatives that have individual readings. For example, (4) can be used in the “individual” scenario for (2):

(4) Nichego sebe, na kakih jazykakh ona razgovarivayet! (Russian)

PARTICLE on what languages she speaks!

Other wh-exclamatives having individual readings are those used when the speaker opens the door after hearing a doorbell and is surprised to see some unexpected person:

(5) O-o, kogo ja vizhu! (Russian) Wie hebben we daar! (Dutch)

Oh, whom I see! Who have we there!

(5) also illustrates the second limitation of the degree approach. I observe that even though some wh-words do not range over degrees, they still can introduce wh-exclamatives. To sum
up, the degree approach gives quite restricted cross-linguistic predictions.

An alternative to the degree approach is a question approach (d’Avis, 2002; Zanuttini and Portner, 2003; Castroviejo Miró, 2008), which stems from the similarity between wh-exclamatives and wh-questions. More precisely, wh-questions and wh-exclamatives are assumed to have the same semantics brought by the wh-clause, and they differ only syntactically (in form) and pragmatically (in use). In d’Avis’ approach to semantics of wh-exclamatives, as in Karttunen’s question semantics, a wh-clause is taken to denote a set of its true answers. d’Avis’ approach is based on Heim’s two notions of answerhood (Heim, 1994). answer1 in the actual world w is the intersection of the question’s extension, answer2 is a set of worlds where answer1 is the same as answer1 in w. Consider a wh-exclamative

(6) \textbf{Wen Maria eingeladen hat!} (German)

It can be used to express surprise in a situation when the speaker expected Maria to invite only John, but it turned out that she invited John and also Bill. In this situation the denotation of the wh-clause underlying (6) in the actual world w is:

\[ [\text{wh-clause}] (w) = \{ p \mid \exists x (p = \lambda w. [\text{invited}] (w) (m) (x) \land [\text{invited}] (w) (b) (m)) \} \]

and the two answer concepts are

\[ \text{answer1} (w) = \bigcap [\text{wh-clause}] (w) = \{ w' \mid [\text{invited}] (w') (j) (m) \land [\text{invited}] (w') (b) (m) \} \]
\[ \text{answer2} (w) = \{ w' \mid \text{answer1} (w') = \text{answer1} (w) \} \]

In d’Avis’ approach a wh-exclamative has the same denotation as the underlying wh-clause, and is used felicitously iff two conditions hold: (i) speaker’s expectations entail the negation of answer1 (w); (ii) the speaker knows answer2 (w). In brief, the approach claims that wh-exclamatives express surprise at a particular answer to the wh-clause. For example, (6) is felicitous: (i) holds because the speaker did not expect Maria to invite Bill, (ii) since the speaker knows whom Maria actually invited.

Even though d’Avis does not provide an analysis for (1), I propose that a minimal assumption can make his approach deal with degree readings too. The meaning of a gradable predicate “tall” in a world w is taken to be of type (d, ⟨e, t⟩), and its meaning is defined as

\[ [\text{tall}] (w) = \lambda d \lambda x. \text{the height of } x \text{ in } w \geq d \]

This entails that “tall” is downward monotone in the following sense:

\[ \forall w, x, d, d' (d' < d \land [\text{tall}] (w) (d) (x) \rightarrow [\text{tall}] (w) (d') (x)) \]

The use of (1) is felicitous in a scenario when the speaker expected John to be not particularly tall (say, not more than 1m80), but John appeared to be 2m tall. This is predicted by the proposal because

\[ \text{answer1} (w) = \{ w' \mid [\text{tall}] (w') (j) (d_{2m}) \} \text{ (worlds where John is at least 2m tall)} \]
\[ \text{answer2} (w) = \{ w' \mid [\text{tall}] (w') (j) (d_{2m}) \land \neg \exists d' > d_{2m} ([\text{tall}] (w') (j) (d')) \} \]

(11) \text{answer1} (w) is a set of worlds where John is less than 2m tall, thus the expected proposition is a subset of \text{answer1} (w), so (i) and (ii) are satisfied. This only works when the semantics of a gradable adjective is monotone (Nouwen, 2010). Otherwise, answer1 (w) and answer2 (w) are a set of worlds where John is precisely 2m tall, and the proposal makes an undesirable prediction that (1) is felicitous if the speaker expected John to be around 2m20, but John is “only” 2m tall.

Note, by the way, that in order to apply the reasoning suggested above to wh-exclamatives involving absolute gradable adjectives (Kennedy, 2007), like “dry”:

(12) \textbf{How dry the cake was!}

“dry” has to be reinterpreted as a relative adjective. Then (12) is correctly predicted to be felicitous when the speaker did not expect the cake to be as dry as it actually is.
The reading of (2) involving degree is also predicted by d’Avis’ approach. Indeed, \(\text{answer}_1(w)\) says that Mary speaks English, Afrikaans, and Swati, \(\text{answer}_2(w)\) that Mary speaks only these three languages. The speaker expected that Mary does not speak any exotic language, in particular, not Afrikaans or Swati. Therefore, (i) and (ii) hold.

d’Avis approach does not have the two limitations the degree approach shows. First, it predicts that individual readings of wh-exclamatives are possible. It is undesirable for (2), but a positive side of this is acceptance of an individual reading of (4). Second, contrary to the degree approach, d’Avis’ approach allows wh-exclamatives introduced by wh-words not ranging over degrees like (5), though leaving a similar English example (3) unexplained. Together with the extension for gradable predicates, the approach also predicts readings involving degree ((1) and (2)). Moreover, it does so without need for gradable predicate insertion. Therefore, it has wider cross-linguistic coverage than the degree approach: it covers some data from Russian, German, and Dutch unexplained by the degree approach. However, it overgenerates wh-exclamatives for English.

The proposal raises an interesting question about the reason of the cross-linguistic difference (e.g. between (3) and (5)). Also a further investigation of the felicity conditions is needed. For example, (i) suggests that wh-exclamatives are mirative. Consequently, we have to provide a separate explanation for the use of wh-exclamatives as compliments (Zanuttini and Portner, 2003) like:

(13)  What a nice house you have!
used when the speaker sees the house for the first time, and the house is as nice as he expected. Here I agree with Rett (2008) that the speaker uses (13) insincerely. Condition (ii) makes wh-exclamatives resemble wh-questions not requiring answers like:

(14)  After all, how tall is John?!
Time permitting, I will present few initial speculations on similarity between these types of utterances.

The Challenge of Argumentative Discourse:
integrating revision updates in a text grammar formalism
Noor van Leusen (ZAS, Berlin)

Since the development in the past decades of what might be called the ‘dynamic semantic paradigm’, see [4], it has become part and parcel of our thinking about discourse interpretation that the meaning of an utterance is characterised by the update, or change it brings about in its context of interpretation. The context of interpretation might variously be a common ground, an abstract information state, or a set of possible worlds restricted by what has been said so far in the conversation. This perspective recognizes meaning as an essentially context-dependent notion, but also implies a move towards reasoning as the central tool of our interpretational machinery. The meaning of an utterance is identified by reasoning about the consequences of accepting its content, given what we know, or are willing to accommodate, about the world, the utterance situation, and the public commitments and private intentions of the participants.

Much of the linguistic work framed in terms of the dynamic perspective concerns forms of assertion whose semantics can be described in terms of purely additive or monotonic updates. In this talk, however, we focus on argumentative discourse contributions such as denial, counterevidence, objection, and concession, whose meaning, as we will claim, is more accurately captured in terms of revisional updates. The discourse in (1) illustrates this.

(1) Amy: Our train leaves at four. (assertion)
    Ben: No, at five past. (denial)
    Amy: Well, it says so on the screen overthere. (counterevidence)
    Ben: Oh, I guess you’re right then. (concession)

Reasoning about the meaning of the last three contributions crucially involves the critical evaluation and potential rejection of information accepted or under discussion in the context of interpretation. For instance, even if Amy is not going to accept Ben’s denial, comprehending his utterance as a denial implies she must find out that what he intends to convey is that the train is leaving at five past instead of four o’clock. World knowledge tells her that a train cannot leave both at four o’clock and at five past, so accepting the denial would imply rejecting her own preceding claim, cf. [1, 5].

Amy’s reply is at the same time a counterargument to Ben’s claim and evidence in favour of her own. Given common knowledge which says that if a screen with up-to-date information announces that a train leaves at four, it most probably does so, accepting this information may lead to the acceptance of Amy’s previous claim and the rejection of Ben’s denial. In addition, in the domain of dialogue strategies, the assumption that a conversation participant will not implicitly reject a claim she herself put forward previously is extremely important in getting at the intended meaning of Amy’s reply. Amy is defending her own previous claim - this is what resolves the elliptic ‘it says so’ in her utterance.

Finally, comprehending Ben’s last utterance as a concession crucially involves finding out that he is now giving up or retracting the claim he previously sup-

---

1 In the wake of Hamblin (1971) we view commitments as ‘as-if beliefs’, or ‘publicised beliefs’, generated and possibly retracted as a result of the communication process.
ported (namely that the train leaves at five past four), and does so because he accepts the counterargument provided by Amy.

Applying insights from belief revision theory [2], the interpretation of argumentative discourse contributions can be modeled directly by means of an update semantics whose basic update operation is nonmonotonic ‘revision’ rather than monotonic ‘merge’. A proposal to this effect was made in [5], which employs finegrained compositional DRT [7] to represent contexts of interpretation.

In this talk we build on the theory presented in [5], but our focus will be on those interactions that result from linguistic and discourse grammatical constraints on the one hand and the semantic and logical constraints given by belief revision theory on the other. A well-known property of revision updating is its nondeterminicity: a context set can generally be updated in more than one way to satisfy the revision task. Thus, belief revision theory predicts that argumentative contributions systematically result in underspecified meanings in a manner in which purely additive ones do not. Intuitively speaking, however, this prediction is not born out: even though the meanings of argumentative contributions can be underspecified, they don’t seem to be ‘more’ undeterministic than information providing contributions, and pinpointing their most preferred interpretation does not cause a higher processing load.

An obvious hypothesis is that in discourse interpretation, linguistic and discourse theoretical factors delimit the information that is open to revision, reducing underspecification to the extent that there is no essential difference between argumentative and nonargumentative contributions. If revision applies only locally in a discourse structure perhaps the ‘deep reasoning’ about contextual information can be avoided.

We find a platform for testing this hypothesis in Logical Description Grammar, a formalism for the specification of linguistic theory developed by Muskens and extended to cover discourse analysis in [6, 7]. LDG is similar to text grammar systems like LTAG for discourse (Webber c.s.) and the Linguistic Discourse Model (Polanyi) in that it presupposes that discourse representations are tree structures, but differs in that it adds a level of descriptions. In the course of a conversation, a hearer incrementally constructs a discourse description, a set of statements constraining the syntactic, semantic, and pragmatic properties of the discourse. Interpretation is a reasoning task, in which the hearer infers what tree structures may verify the discourse description given his grammatical knowledge and preferences, and his nonlinguistic knowledge and beliefs.

In order to cope with divergencies between participants’ commitments arising from the incrementality of the interpretation process and from argumentative contributions, we extend the LDG formalism so that each node in a described tree carries separate semantic values for each participant. Discourse descriptions specify conditions on node ownership, which affect the composition and content of semantic values for each participant. This implements a basic form of cross-speaker ‘grounding’ of discourse contributions\(^2\) and allows us to define dialogue meaning as the set of individual participants’ commitment slates, inferrable for any verifying model of the discourse description.

Two essentially different approaches may be pursued to integrate revision

\(^2\)See e.g. [8] for a full-fledged treatment of grounding.
updates in the text grammar formalism. One is to import e.g. ‘revisional compositional DRT’, as specified in [5], directly in the description language and let the basic update operation at any node in the discourse tree be ‘revision’ rather than merge. Revision is an operation at object level in the language. The other is to try and make use of means already available the description language in such a way that the update effect of argumentative discourse contributions on the output commitment slates of the relevant participants is revisional. That is, in going from one state of the discourse description to the next, commitments are lost or replaced. The proposal in [5] then only models the update effect at metalevel.

In line with [3] we opt for the second approach and use conventional means such as importing semantic values in the scope of nonveridical connectives or discourse relations via discourse attachment. Moreover, we may ‘walk the discourse structure’, either to retrieve values that must be saved from inscoping, or to decide whether contextual information is to be accepted or not by a participant given the contribution just made.

An implementation of this kind lays bare linguistic constraints on the revision process. Interaction with parameters such as anaphora resolution and information structure constrain underdeterminism in that they help to pinpoint the initial culprit information which is to be retracted. The subsequent update effect on the publicised contextual information is in general still underspecified, however. The same goes for the effect on the participants’ private knowledge and beliefs. The intentions of participants in saying what they say, their support and justification of what they commit to, their level of confidence in their own and other’s beliefs must be taken into account if we want to explain why one possible revision track is preferred over another. Thus, where the interaction with nonlinguistic knowledge and beliefs in the interpretation process is concerned, the ‘deep reasoning’ of belief revision theory cannot be avoided.

References

Sources of Expectation in Concession

Introduction. Progress in pushing the state of the art in major text processing areas such as information extraction is hindered by a lack of practical algorithms for deep semantic processing. At the discourse level, while attempts have been made to automatically recognize discourse relations, it is less clear how this information can be used in practical applications. Our work is motivated by two basic questions: a) what kind of inferences can we draw when we identify a discourse relation? and b) what kind of semantic representation will facilitate information rich inferencing? We start this line of work with the study of concessive senses in PDTB (Prasad et al., 2008) (Miltsakaki et al. 2008). Concession is a particular semantic relation between the interpretation of one clausal argument that creates an expectation and the second clausal argument which explicitly denies it. Prior work on formalizing the semantics of Concession recognizes and analyzes two subtypes, direct and indirect (Winter and Rimon, 1994). This distinction corresponds, roughly, to the oft-cited distinction between “denial of expectation” and “concessive opposition” respectively (Lakoff, 1971), (Lagerwerf, 1998), (Korbayova and Webber, 2007). In direct concession shown in (1), a general entailment is presupposed, paraphrasable as “Beautiful women usually get married”. Because of this rule, “Great Garbo was considered the yardstick of beauty” directly triggers the expectation that she married, which is explicitly denied in $\text{Argd}$. On the other hand, in (2), “not having a car” does not entail “not having a bike”. In this case, the general rule is probably “not having a car implies being less mobile”, which is indirectly denied in $\text{Argd}$, as having a bike implies being mobile.

(1) Although Greta Garbo was considered the yardstick of beauty, she never married.
(2) Although he does not have a car, he has a bike.

So far, logical accounts of Concession have focused on how the expectation is denied. We are interested in how the expectation is created, i.e. in the “general entailment” that must hold in the context in order to trigger the expectation. Characterizing such an entailment is crucial to derive appropriate inferences.

Sources of expectation in PDTB. PDTB 2.0 includes 1193 tokens of explicit connectives annotated as “Concession”. The most common concessive connective is “but” (508 tokens), followed by “although” (154 tokens). We analyzed 1000 of these tokens, and we identified four types of sources of expectation: Causality, (nonmonotonic) Implication, Correlation, and Implicature. (3.a-d) show four examples:

(3.a) This meeting “put in motion” procedural steps that would speed up both of these functions. But no specific decisions were taken on either matter. (Causality)
(3.b) Although working for U.S. intelligence, Mr. Noriega was hardly helping the U.S. exclusively. (Implication)
(3.c) The Treasury will raise 10 billion in fresh cash by selling 30 billion of securities. But rather than sell new 30-year bonds, it will issue 10 billion of 29 year, nine-month bonds. (Correlation)
(3.d) Although it is not the first company to produce the thinner drives, it is the first with an 80-megabyte drive. (Implicature)

In (3.a), “the procedural steps” that were “put in motion” during the meeting” ( defeasibly) cause “taking important decisions in both of these functions". Note that in this case the concessive relation allows the

---

1 In all the examples, the argument in boldface is the one that creates the expectation, while the one in italics is the one that denies it. We refer to them as $\text{Argc}$ and $\text{Argd}$ respectively.
inference that meetings which define procedural steps on specific topics are causally related with decision taking related to the same topics. The example shown in (3.b) involves nonmonotonic implication rather than causality. In (3.b), it is strange to say that working for U.S. intelligence normally “causes” helping U.S. exclusively. Rather, the former seems a kind of necessary condition or job requirement for the latter: working for U.S. intelligence implies helping U.S. exclusively. In (3.c), the triggered expectation arises because the eventuality Argc usually occurs with the denied eventuality described in Argd. In (3.c), a suitable interpretation is that the Treasury usually raises money by selling new 30-year bonds while in this case, a different strategy was adopted. Finally, (3.d) does not appear to fall in neither one of the three categories, nor does it seem that the expectation is identified on semantic grounds only. Rather, it seems that the argument is insufficient/irrelevant with respect to the satisfaction of speaker’s intentions, i.e. communicating what is the property of drivers which is really worth noting in that context. Since those cases cannot be accounted for with formal semantics, we tentatively use the label ‘Implicature’ to refer to them. In the logical formalization below, we avoid considering this case.

Annotation study. On the basis of the above observations, we provided refined sense annotations for 1000 concessive tokens with the four new labels. Two trained annotators, who were given free descriptions of the semantics, annotated the tokens. The task was to select the label that best described the relation between the argument triggering the expectation and the triggered expectation. The kappa statistic yielded .8 agreement, which is within the range generally accepted as an indicator of substantial inter-annotator reliability. The most common source of expectation comes from causal relations (41.6%), followed by Implication (28.7%), Correlation (19.4%) and Implicature (10.3%).

Logical account. To enable inferencing in automatic text processing, we need to build efficient semantic representations for the interpretation of discourse relations. We do so by utilizing the basic principles of Hobbs’s 2005 logic framework which builds on the Davidsonian’s notion of Reification. Natural language statements are formalized such that eventualities (i.e. events or states) correspond to constants or quantifiable variables of the logic. Hobbs’ distinguishes two parallel sets of predicates: primed and unprimed. The unprimed predicates are standard first order logic predicates commonly used in logical representations. For example, (give a b c) asserts that a gives b to c in the real world. The primed predicate represents the reification of the corresponding un-primed relation. The expression (give’ e a b c) says that e is a giving event by a of b to c. Eventualities may be possible or actual. In Hobbs’, this is codified via a unary predicate Rexist that holds for eventualities really existing in the world. To give an example cited in Hobbs, if I want to fly, my wanting really exists, but my flying does not. This is represented via the conjunction (Rexist e) ∧ (want’ e I e1) ∧ (fly’ e1 I). In Hobbs’ framework, every relation on eventualities, including logical operators, causal/temporal relations, etc., may be recursively reified into another eventuality. This allows us to build logic representations for discourse interpretations that are simple to use for deciding what inferences are allowed. Drawing from Hobbs’, we proposed a preliminary logical account of Concession arising from Causality in (Robaldo et al. 2008). In here, we revise this logical account and we propose the following formula for representing the meaning of (3.a):

\[
\begin{align*}
\text{exist} & \left( c^c, c, e, e, e_d \right) \\
\left( \text{Rexist } c^c \right) & \land \left( \text{partialInstance } c, c \right) \land \\
\left( \text{cause’ } c, e, e \right) & \land \\
\left( \text{Rexist } c \right) & \land \left( \text{Rexist } e \right) \land \left( \text{Rexist } e_d \right) \land \\
\left( \text{inconsistent } e, e_d \right)
\end{align*}
\]

<table>
<thead>
<tr>
<th>Reference of the eventualities:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e_c = ) “The meeting put in motion procedural steps”</td>
</tr>
<tr>
<td>(e^c = ) “Important steps causes taking decisions”</td>
</tr>
<tr>
<td>(e_\text{c} = ) “Specific decisions were taken”</td>
</tr>
<tr>
<td>(e_d = ) “Specific decisions were not taken”</td>
</tr>
</tbody>
</table>

\(c^c\) is a general causal rule that holds in the context and instantiates in a contingent causal rule holding between \(e_c\) and \(e_c\). The latter is inconsistent with \(e_e\), which directly comes from Argd.
The semantics of Implication and Correlation differs only in the general rule, which in these cases indicates a non-monotonic Implication and a likely trend respectively, rather than Causality. The formulae representing the meaning of (3.b) and (3.c) are:

\[
\text{(exist } (i^c, i, e, e, e_d) \\
(Rexist i^c) \land (\text{partialInstance } i, i^c) \land \\
(\text{nonMonotonicIf } i, e, e) \land \\
(Rexist i) \land (Rexist e) \land (Rexist e_d) \land \\
(\text{inconsistent } e, e_d) \) 
\]

**Reference of the eventualities:**
- \(e_c = \text{“Mr. Noriega worked for CIA”}
- \(i^c = \text{“Who works in CIA should help USA only”}
- \(e_e = \text{“Mr. Noriega helped USA only”}
- \(e_d = \text{“Mr. Noriega did not help USA only”}

\[
\text{(exist } (i^c, i, e, e, e_d) \\
(Rexist i^c) \land (\text{partialInstance } i, i^c) \land \\
(\text{nonMonotonicIf } i, e, e) \land \\
(Rexist i) \land (Rexist e) \land (Rexist e_d) \land \\
(\text{inconsistent } e, e_d) \) 
\]

**Reference of the eventualities:**
- \(e_c = \text{“The Treasury will sell 30 billion of securities”}
- \(i^c = \text{“The Treasury usually sells yearly bonds”}
- \(e_e = \text{“The Treasury will sell 30-year bonds”}
- \(e_d = \text{“The Treasury will not sell 30-year bonds”}

Note that, in these cases, it should be not inferred the existence of a causal relation between the eventuality denoted by Arge and the raised expectation, contrary to what is done in every other current logical account of concessive relations.

**Acknowledgements**

Financial support to Eleni Miltsakaki by the NSF IIS-0803538 grant is gratefully acknowledged.

**References**


Du rôle de la sous-spécification dans les interactions verbales pathologiques (formalisation à base de SDRT).

Manuel Rebuschi
Manuel.Rebuschi@univ-nancy2.fr
LHSP – Archives H. Poincaré (UMR 7117)
Université Nancy 2
Projet DiaRaFor (MSH de Lorraine)

Michel Musiol
Michel.Musiol@univ-nancy2.fr
Laboratoire InterPSY (EA 4432)
Université Nancy 2
Projet DiaRaFor (MSH de Lorraine)

Résumé court :

L’objet du travail est de combiner l’analyse pragmatique des interactions verbales issue de travaux en psychologie aux instruments théoriques proposés par la sémantique formelle. Une extension de la SDRT est proposée qui permet de formaliser le dialogue pathologique impliquant des sujets schizophrènes. La sous-spécification, tant pragmatique que sémantique, apparaît comme jouant un rôle majeur dans les ruptures propres aux productions verbales pathologiques.

Résumé long :

Depuis les années 1980 des psychologues et quelques linguistes se sont attelés à l’analyse de discours sans but, i.e. sans visée intentionnelle, impliquant des patients schizophrènes. Ces analyses, dites “hiérarchiques conversationnelles”, s’appuient sur des concepts pragmatiques issus de la pragmatique standard (Searle & Vanderveken, 1985 ; Sperber & Wilson, 1995), mais également sur des concepts visant à appréhender la spécificité des structures argumentatives (Roulet et al. 1985). Conduites de manière informelle, ces analyses produisent des arbres hiérarchiques qui représentent la structure pragmatique de l’interaction conversationnelle.

Des travaux récents en psychologie (Musiol, 2009 ; Musiol & Verhaegen, 2009) ont permis d’identifier quatre types de ruptures conversationnelles intervenant au niveau des relations pragmatiques inter- ou intra-interventions, dans le cas de conversations pathologiques. La déficience des sujets schizophrènes intervient au cours de la construction des représentations conversationnelles, incluant les liens pragmatiques (i.e. les structures hiérarchiques) comme les représentations sémantiques. Des travaux antérieurs ont montré que dans certains cas tout au moins, il pouvait en être rendu compte tout en supposant une logicité sans défaut des sujets malades (Musiol & Rebuschi, 2010). Autrement dit, le décalage produit dans l’interaction peut être expliqué par un dysfonctionnement à un niveau pragmatique, sans contradiction au niveau du contenu logico-sémantique (c’est-à-dire que le sujet maintient une représentation du monde cohérente). La modélisation proposée est donc double : elle comporte en parallèle la représentation conversationnelle du sujet normal, où la rupture est manifeste, et celle du patient schizophrène, où elle est invisible.

Le but de notre exposé est d’affiner cette double modélisation en nous appuyant sur la SDRT (Asher & Lascarides 2003), tout en empruntant des éléments à l’approche de Poesio & Traum (1997) ou à celle de Ginzburg (2010). Nous proposons d’étendre la SDRT pour intégrer :

1) la diversité des relations considérées par l’analyse pragmatique issue de la psychologie, au-delà des seules relations rhétoriques qui paraissent être considérées
par la SDRT, et permettant d’appréhender la complexité des interactions verbales (qui supposent le partage de représentations, de croyances, et de connaissances sur le monde ; des intentions communicatives ; des ajustements méta-conversationnels) ;

(2) la sous-spécification, non seulement au niveau des SDRSs, mais aussi au niveau des relations pragmatiques, permettant de gérer les cas où le rattachement d’un segment conversationnel n’est pas immédiatement résolu mais reporté à une élucidation future.

La sous-spécification joue un rôle important dans les interactions verbales pathologiques que nous avons pu analyser. En effet les données empiriques (transcriptions d’échanges réels) révèlent que les ruptures sont très souvent produites au niveau d’ambiguïtés résolues dans un sens puis dans l’autre (pour le dire vite). Cela nous incite à employer des USRs (underspecified semantic representations) appréhendées comme méta-représentations, c’est-à-dire comme jouant le rôle de contraintes sur la construction de modèles pour la conversation (cf. Muskens 1999, Bunt 2008).

Pour ce qui est du corpus duquel nous extrayons ces analyses, un total de 30 participants était inclus dans cette recherche, 18 hommes et 12 femmes (âge : 41,5 ± 16). Tous les sujets sont de langue maternelle française. 22 participants présentent un diagnostic de schizophrénie, 14 hommes et 8 femmes. 8 participants ne présentent aucun diagnostic psychiatrique et ne prennent aucun traitement psychotrope ; ils constituent notre groupe contrôle. Il s’agit de 4 hommes et de 4 femmes (âge : 32,1 ± 14,3). Parmi les 22 schizophrènes, 15 d’entre eux prennent un traitement antipsychotique (SCH-A : moyenne en équivalent chlorpromazine en milligrammes par jour : 281 ± 118) et 7 ne prennent aucun traitement. La répartition en fonction des sous-types cliniques du DSM-IV pour les patients schizophrènes est la suivante : 14 schizophrènes de type paranoïde (dont 5 ne prennent aucun traitement antipsychotique) et 8 schizophrènes de type désorganisé (dont 2 ne prennent aucun traitement antipsychotique). Les patients sont rencontrés dans deux structures hospitalières distinctes (Centres Hospitaliers Spécialisés de Troyes et de La Rochelle). Enfin, les 8 participants de notre groupe contrôle (HC) ont été rencontrés dans des lieux publics. Ils n’ont jamais présenté de pathologie psychiatrique et n’ont fait aucun usage de médicaments psychotropes par le passé. Les 30 entretiens sont réalisés par un interlocuteur psychologue-chercheur confronté soit à un interlocuteur diagnostiqué schizophrène, soit à un interlocuteur ne présentant pas de diagnostic psychiatrique. La consigne était autre que de converser. S’ils exprimaient certaines difficultés à démarrer l’entretien, nous proposions alors une thématique relativement générale concernant leurs occupations et/ou leurs préoccupations. L’analyse exhaustive de l’ensemble de notre corpus d’investigations empiriques nous a permis d’extraire 403 séquences conversationnelles (ou transactions). Seules une dizaine d’entre elles présente un niveau d’incohérence, i.e. de désorganisation pragmatique (présence de contradictions) tel que leur analyse est susceptible d’être complétée sur le plan sémantique.

Nous présenterons donc plusieurs analyses de séquences dialogiques issues d’enregistrements opposant à chaque fois un patient schizophrène et son interlocuteur « normal », et impliquant différents types de sous-spécification :
- des cas d’ambiguïté lexicale (voire de « sur-ambiguïsation ») ;
- un cas d’ambiguïté liée à un indexical (« ici ») ;
- un cas sous-spécification pragmatique (i.e. dans le rattachement d’un segment conversationnel).
La modélisation proposée tire bénéfice de traits propres à la SDRT, comme la notion de contrainte liée à la frontière droite. Elle corrobore certaines hypothèses tirées de l’approche psychologique concernant l’interaction conversationnelle avec les sujets schizophrènes. De façon générale et correlative, ce type de modélisation semble pouvoir contribuer positivement à la théorisation linguistique par la confirmation empirique de règles pragmatiques et sémantiques, tant dans leur respect (par les interlocuteurs réputés normaux) que dans leur transgression (par les interlocuteurs diagnostiqués schizophrènes).

Références


This paper describes a modified replication study of Noveck’s experiment (2001) on the scalar terms *must* and *might*. In the original study, Noveck conducted an experiment on the acquisition of the scalar terms *must* and *might* and the quantifier *some*. He found that children use the semantic interpretation of the modal *might* more frequently than adults and accept *might* in situations where *must* would also be true. While the Pragmatic Delay Hypothesis (Chierchia, 2005) states that children have access to semantic knowledge but lack – at least for the computation of scalar implicatures (SIs) - an essential piece of pragmatic knowledge - Grice’s Maxim of Quantity, the Processing Limitation Hypothesis suggests that children have - due to a limited working memory - problems to keep and compare two representations of a statement and therefore fail to compute SIs. Another hypothesis by Chierchia (2005) suggests that children focus on the truthfulness or falsity of a statement rather than on its appropriateness.

22 monolingual native speakers of German of the age-groups 5, 7 and 10 participated in the experiment. Materials were similar to Noveck (2001). The statements were presented in German. Only positive statements were presented and 2 additional ones added to stress the contrast between the modal verbs *might* and *must* to see whether children are more likely to compute SI if the contrast between the statements is stronger. Since Noveck’s study contained the logical term *or* in the task, I reformulated the task so that it contained no possible distracting scalar terms to ensure that the logical term *or* will not give children additional trouble to evaluate the statements.

Participants were confronted with three boxes. Box I contained item A, e.g. a bear, box II contained items A and B, e.g. a bear and a rabbit. Both boxes were open and the content was clearly visible. Box III remained closed and the subjects were told that this box contained the same toys as one of the open boxes. Participants were instructed that they would hear statements about box III and have to decide whether the statements are either correct, incorrect or partially correct. The following sentences were uttered in terms by two glove-puppets: (1) There has to be B in the box. (false); (2) There might be A and B in the box. (true); (3) There has to be A in the box in any case. (true); (4) there might possibly be A in the box. (true); (5) There might possibly be B in the box. (true); (6) There might be A in the box. (true). The procedure was repeated so that each child evaluated three sets of statements with different toys.

The distribution of yes- and no-answers for each age-group per statement is similar to Noveck (2001) (see table A). At the first glance it appears that 5-year-olds are too young to manage this reasoning task. This is not because their reasoning skills are not developed enough but because they interpret statements differently than expected and tend to understand the uttered statements as exhaustive descriptions of the content. For example, younger children reject the statement *There must be A in the*
box and accept the statement *There might be A in the box* more often than older subjects. This is because they understood the statement as *There might only be A in the box* and *There must only be A in the box* (table 1). Based on this interpretation it is impossible to compute the expected SI for the statements *There might possibly be A in the box* and *There might be A in the box*. In this situation *might/might possibly be A* is the most informative statement.

Based on an exhaustive reading of the statements there is another statement for which SIs can be computed: *There has to be A in the box*. Participants who consider this statement as an exhaustive description of the content and calculate SI reject it because it is too strong in the current context (since there could also be A+B in box III). I call these early implicatures which are based on exhaustive reading “child-implicatures”. In contrast to the expected SIs (which are lower bound), Child-implicatures are upper bound implicatures. Many children compute child-implicatures for the statement *There might be B in the box* and reject it since it is impossible that there is only B in box III (table 2). The results of 5-year-old children prove that they are able to compute SI, however the implicatures they compute differ from the ones adults calculate.

Moreover, younger and older participants consider scalar strengthening at different points. Only the 7-year-old children interpreted the statement *There might be A in the box* semantically (might, not excluding must) at rates which are significantly above chance level and significantly higher than that of the 5- and 9-year children (table A). This is because fewer 9-year old children consider the statements as exhaustive descriptions and calculate SIs since they expect that A is necessarily in box III. While SIs are increasing with age, child-implicatures are decreasing (compare tables 3 and 4).

Concerning the acquisition of SIs my interpretation of these findings is that especially young children exploit the Q-Principle (“Say as much as you can”; Horn, 1996) and rely on the speaker to supply sufficient information. They therefore interpret the statements as exhaustive descriptions and calculate implicatures based on the Q-Principle since they do not expect that the speaker applies to the R-Principle (“Say no more than you must”; ibid.) and says less than is actually meant. Slightly older children are aware of the R-Principle and for this reason interpret the uttered statements differently and realise that the speaker violated the Q-Principle.

The general conclusion is that - under certain circumstances - even five-year-old children are able to calculate the expected adult-SI. However, they calculate child-implicatures more frequently than ’normal’ SIs (compare tables 3 and 4). From this perspective, the claim that implicatures are in general acquired late can not be uphold. It seems more important to differentiate between early and late implicatures.

**Table 1:** shows the amount of interpretations with the implicature that the description of the content of the box must be exhaustive for each age group in percentage. The question marks refer to the fact that some subjects applied a different strategy to the task. They did not focus on the modal verb but on the item mentioned, considered the statement *There
might/might possibly be A in the box as exhaustive description and rejected it or evaluated it as halbrichtig since it is also possible that there is A and B in box III.

<table>
<thead>
<tr>
<th></th>
<th>5-year-olds</th>
<th>7-year-olds</th>
<th>9-year-olds</th>
</tr>
</thead>
<tbody>
<tr>
<td>In any case there has to be A in the box.</td>
<td>41.2</td>
<td>33.3</td>
<td>5.6</td>
</tr>
<tr>
<td>There might/might possibly be A in the box.</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>There might possibly be B in the box.</td>
<td>33.3</td>
<td>33.3</td>
<td>16.7</td>
</tr>
</tbody>
</table>

Table 2: shows the average amount of calculated child-implicatures out of those children who interpreted the statements in the way that the content of the box must be exhaustive in percentage. 
*: p < 0.05, **: p < 0.01

<table>
<thead>
<tr>
<th></th>
<th>5-year-olds</th>
<th>7-year-olds</th>
<th>9-year-olds</th>
</tr>
</thead>
<tbody>
<tr>
<td>In any case there has to be A in the box.</td>
<td>38.9</td>
<td>93.3**</td>
<td>33.3</td>
</tr>
<tr>
<td>There might possibly be B in the box.</td>
<td>100**</td>
<td>72.2</td>
<td>100**</td>
</tr>
</tbody>
</table>

Table 3: shows the average amount of calculated SIs for each age group in percentage.

<table>
<thead>
<tr>
<th></th>
<th>5-year-olds</th>
<th>7-year-olds</th>
<th>9-year-olds</th>
</tr>
</thead>
<tbody>
<tr>
<td>There might be A in the box.</td>
<td>7.6</td>
<td>5.3</td>
<td>44.4</td>
</tr>
<tr>
<td>There might/might possibly be A in the box.</td>
<td>11.1</td>
<td>29.2</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 4 shows the average amount of calculated child-implicatures for each age group in percentage.

<table>
<thead>
<tr>
<th></th>
<th>5-year-olds</th>
<th>7-year-olds</th>
<th>9-year-olds</th>
</tr>
</thead>
<tbody>
<tr>
<td>In any case there has to be A in the box.</td>
<td>17.6</td>
<td>29.2</td>
<td>5.6</td>
</tr>
<tr>
<td>There might possibly be B in the box.</td>
<td>33.3</td>
<td>23.8</td>
<td>16.7</td>
</tr>
</tbody>
</table>

Table A: shows the average amount of correct responses to modal statements in percentage. In this table I consider yes as the correct answer for the statements There might/might possibly be A in the box although it underdetermines that there actually has to be A in the covered box. I do so because once a statement is true for at least one of the open boxes, it is also true for the covered box.
*: p < 0.05, ** : p < 0.01

<table>
<thead>
<tr>
<th>Statement</th>
<th>Expected answer</th>
<th>5-year-olds</th>
<th>7-year-olds</th>
<th>9-year-olds</th>
</tr>
</thead>
<tbody>
<tr>
<td>there has to be A in any case</td>
<td>Yes</td>
<td>82.4**</td>
<td>66.6</td>
<td>94.4**</td>
</tr>
<tr>
<td>might be A</td>
<td>Yes</td>
<td>61.5</td>
<td>94.7**</td>
<td>44.4</td>
</tr>
<tr>
<td>might/might possibly be A</td>
<td>Yes</td>
<td>50</td>
<td>58.3</td>
<td>38.7</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>64.6</td>
<td>73.2**</td>
<td>59.3</td>
</tr>
<tr>
<td>must be B</td>
<td>No</td>
<td>40</td>
<td>63.3</td>
<td>94.4**</td>
</tr>
<tr>
<td>might possibly B</td>
<td>Yes</td>
<td>80**</td>
<td>80.9**</td>
<td>83.3**</td>
</tr>
<tr>
<td>might be A und B</td>
<td>Yes</td>
<td>100**</td>
<td>91.3**</td>
<td>100**</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>74.5**</td>
<td>78.6**</td>
<td>92.3**</td>
</tr>
</tbody>
</table>

References:
Index des auteurs

Abrusan, Marta, 29
Antomo, Mailin, 26
Arsenijević, Boban, 15

Bianchini, Alessia, 61
Boleda, Gemma, 15
Borschev, Vladimir, 7
Bras, Myriam, 34
Chernilovskaya, Anna, 55
Del Prete, Fabio, 43
Furukawa, Yukio, 52
Gamerschlag, Thomas, 17
Gehrke, Berit, 15
Groenendijk, Jeroen, 11
Homer, Vincent, 46
Hsieh, ShuKai, 20
Hunter, Julie, 40
Leth, Palle, 31
Mari, Alda, 37
McNally, Louise, 15
Miltsakaki, Eleni, 61
Musiol, Michel, 64
Musken, Reinhard, 12
Partee, Barbara, 7
Petersen, Wiebke, 17
Prérot, Laurent, 20, 34
Rebuschi, Manuel, 64
Robaldo, Livio, 61
Röhrig, Stefanie, 67
Schweitzer, Susan, 37
van Leusen, Noor, 58
Vieu, Laure, 34
Winter, Yoad, 8
Winterstein, Grégoire, 23
Yokota, Kenji, 49