

The relation between information structure and syntax

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Course description

The seminar will provide a systematic overview of theories of the syntax-information structure relation. The goal will be to try to formulate the predictions of particular theories (or types of theories) as precisely as possible and evaluate these predictions using a broad range of empirical facts, including (but not limited to) question-answer correspondence, association with focus, movement, binding, scope, crossover phenomena, and morphological exponents.

Topics (preliminary)

1. The place of information structure in grammar as a modular system
2. Typology of theories of the syntax-information structure relation
3. Syntactic category-based theories (Bródy 1990, 1995; Rizzi 1997; Aboh 1998; Abels and Muriungi 2008, etc.)
4. Syntactic feature-based theories (Bošković 1999; Miyagawa 2007, etc.)
5. Syntactic operation-based theories (Chomsky 1977; Tancredi 1990; Drubig 1994; Krifka 2006; Neeleman and van de Koot 2008, etc.)
6. Syntactic cycle-based theories (à la Diesing 1992, López 2009, Slioussar 2011)
7. Syntactic configuration-based theories (Kučerová 2007)
8. Quantification-based theories (Herburger 2000)
9. Predication-based theories (Wedgwood 2003, 2009)
10. Special module-based theories (Vallduví 1992)
11. Free variable-based theories (von Stechow 1994, à la Stanley 2000)
12. Syntax-free theories (Kadmon 2001, à la Récanati 2002)
13. etc.

Participation

This is an optional seminar and open to anybody who is interested. Doing agreed-on readings and taking part in the discussion is strongly recommended and appreciated. Ideally, each participant will present at least one paper during the course. The presentations should be focused on a good understanding of the text and on evaluating its predictions against the broader background developed in the seminar.

Presentations

Date	Theory type	Paper	Presenter
Nov 16	Predication	Wedgwood (2006)	Radek
Nov 23	Syntactic category/cycle	López (2003)	Maria Balbach
Nov 30	Syntactic operation	Neeleman and van de Koot (2008)	Marta Wierzba
Dec 14	IS-syntactic categories	Rizzi (1997)	Sören Schalkowski
Dec 21	IS-syntactic categories	Abels and Muriungi (2008)	Paul Bassong
Jan 11	Partition	Kučerová (in press)	Mira Grubic
Jan 18	Discussion		Radek and Marta
Jan 25	Quantification	Herburger (2000)	Agata Renans
Feb 1	Summary	Everybody	

Session 1

Modules of grammar

1.1 Modularity

Two hypotheses about the language in the mind (Chomsky's *I-language*)

- Mental language is modular → not every linguistic process may interact with every other linguistic process
- Mental language is connectionist → every linguistic process may interact with every other linguistic process

A module consists of

- Specific “vocabulary”—the set of *categories*
- Specific set of *relations*
- Specific set of *operations*, also called *rules*

Generally

- Operations of some module M operate on categories of M , provided that some relation of M between the operated-on categories applies.
- Operations of some module M_1 cannot “understand”/“read” categories of some other module M_2 , that is they can't operate on them.

Examples of (unattested?) cross-modular dependencies

- The more in the front a vowel in a verb stem is articulated, the more in the future the event described by the verb takes place.

(1) bee (in a year), bäh (in a week), baw (tomorrow)

- Nominalizations express speaker's negative attitude towards the event described by the verb.

- (2) a. John is happy that Mary grows tomatoes.
 b. John is happy about Mary's growing tomatoes [and I don't like Mary's growing tomatoes].

Mapping between modules

- If M_1 and M_2 belong to the same larger system (e.g. grammar), they have to communicate somehow
- There must be a mapping procedure between different modules, a “translator”
- Strictly speaking, the mapping procedure violates strict modularity, but it seems to be a necessity; so, to make the violation as light as possible, we might want to constrain the mapping procedure
- The mapping procedure only has access to some (specified) output of M_1 and to the input of M_2 ; it cannot manipulate any objects from any module, it is purely interpretive

Serial vs. parallel computation

- Chomsky vs. Jackendoff (e.g. ?)

1.2 Standard picture

Modules of grammar

- Lexicon?
- Morphology?
- Syntax
- Phonology
- Semantics
- Pragmatics

1.2.1 Syntax

Categories

- *Categories in the narrow sense*: N, V, A, P, etc.
 - Minimal projections (heads)
 - Maximal projections (phrases)
 - Intermediate projections (non-minimal and non-maximal)
- *Features (properties of categories)*: Case, Number, Tense
- *Feature values (properties of features)*: Nominative, Accusative, Singular, Plural, Past

Relations

- Sister
- Dominance
- C-command

Operations

- Merge
 - External merge
 - Internal merge (move)
- Agree (evaluate)

Cycles

- Chomsky (1957): Base rules, transformational rules, lexical insertion (nearly three different modules)
- ?: Deep structure (feeds interpretation), Surface structure (feeds pronunciation)
- Chomsky (1981): D-structure (X-bar theory (pre-merge), interpretation), S-structure (move), logical form (move, interpretation)
- Chomsky (1995: Chapter 3): No intermediate levels with distinct principles associated with them, just logical form (a structure mapped to the C-I interface) and spell-out/transfer (a chunk of structure mapped to the S-M interface)
- Chomsky (1999, 2008): derivation by phase

Comments

- Still 20 years ago, people believed that syntax was not a single module, it was composed of more (around 5) modules (X-bar, move, binding, control, etc.)
- The status of syntactic categories and features is also constantly under debate; a radical simplification of category-types is assumed in nanosyntax (Starke 2009, 2011), where no difference between categories (in the narrow sense), features, and feature values is postulated

1.2.2 Phonology

Categories

- *Syllables*
- *Phonemes*: consonants, vowels, etc.
- *Features of phonemes*: labial, voiced, front, high, etc.

Relations

- Linear precedence
- Adjacency

Operations

- Assimilation, devoicing, omission, vowel harmony, etc.

1.2.3 Semantics

Categories

- entity, situation, possible world, event, truth-value, predicate, proposition, etc.
- organized into so called *types* within a type theory

Relations

- Negation, conjunction, disjunction, union, intersection, subset, implication, etc.

Operations

- Function application
- Predicate modification
- Lambda abstraction
- Type-shifting

Comments

- Semantics is a dubious module, at least in the conception of Heim and Kratzer (1998)
- Its categories are often in close connection to syntactic ones (negation \approx Neg, determiners/quantifiers \approx D/Q, number \approx Num, tense \approx T, events \approx VP, etc.)

- Semantic “operations” exist only because of the reformulation of sets and relations in terms of functions; moreover, the operations are constrained by syntactic relations (perhaps except for type-shifting):
 - Function application and predicate modification are constrained by sisterhood
 - Lambda-abstraction affects variables in a c-commanded/dominated domain
- Just a couple of thoughts on how this state of affairs could be resolved (don’t take this too seriously):
 - The logical (but not an easy) way out is to put whatever is syntactic (operational/rule-based) in semantics into syntax (see e.g. Hornstein and Pietroski 2009 for an attempt).
 - Then, what remains of semantics could either be a purely representational module (having categories (i.e. types), relations between semantic objects, but no operations/rules); see Winter (forthcoming) for an introduction to semantics viewed largely in this way.
 - Alternatively, one could delegate the rest directly to pragmatics.

1.2.4 Pragmatics

Categories

- Speech acts, propositions (presuppositions, implicatures, etc.), discourse referents (referential indices plus their properties), indexicals (speaker, hearer, here, now), common ground, question under discussion

Some relations

- Attitudes: e.g. a relation between an individual and a proposition
- Question under discussion: a partition of the common ground = an equivalence relation between worlds
- Discourse prominence: relations between discourse referents; prominent discourse referents are candidates for so called topics
- Various relations between lexical items: synonymy, hyponymy, Horn-scales, etc.
- Presuppositions: propositions inherently related to some lexical items
- Inferences, implicatures: propositions related to other propositions or speech acts
- Assignment functions: relations between indices (semantic objects) and discourse referents (pragmatic objects)

- Anaphoricity (also “givenness”, “familiarity”, “accessibility”): an identity relation between an index and another index present in the discourse; the lack of such a relation = novelty; see Heim (1982) for *e*-type expressions; Schwarzschild (1999) (and probably earlier) for expressions of any kind
- Alternatives (also “contrast”): a relation between an expression of some type and a salient non-identical expression of the same type
- ...

Operations?

- It is in principle possible (just like in semantics) to reformulate some of the above relations in terms of operations/rules
- *Dialogue*
 - Questioning: input: common ground, output: common ground plus an equivalence relation, defined by the question
 - Answering: input: common ground plus an equivalence relation (current question), output: new common ground, defined by the answer
- *Inference*
 - Input: a proposition or a speech act; output: a proposition

Comments

- Pragmatics is clearly a very broad module, if it qualifies as a module at all.
- It is very well possible that it consists of a number of sub-modules.

1.2.5 Lexicon?

- The status of lexicon as a separate module is the most dubious one.
- An interesting view is that lexicon is the translator between modules—a set of ordered tuples of information from different modules.

(3) “cat”
 $\langle N, \lambda x[P(x)], /kæt/, \langle \text{cat} \rangle \rangle$

1.3 Where is information structure?

Two logical possibilities in a modular theory of grammar

1. Information structure is a separate linguistic module (Vallduví 1992). Some specifics of Vallduví's proposal:
 - Notions such as topic and focus are primitive categories of the module called *informatics*.
 - Informatics is a module of pragmatics.
 - Informatics communicates with truth-conditional semantics. While truth-conditional semantics “produces” *propositions*, informatics does *information*. Hence, one proposition can correspond to more (pieces of) information (structures) (*He hates broccoli* vs. *Broccoli he hates*) and one information (structure) may correspond to more propositions (*Broccoli he hates* and *Broccoli he loves*).
 - These categories are handled at a specific syntactic level—the level of information structure (IS).
2. Information structure is *not* a separate linguistic module, it is “distributed” among other modules (most literature).

Session 2

Notions of information structure

The goal of this session is to introduce some basic notions of information structure. Building on the assumption that information structure is primarily a pragmatic/semantic phenomenon, I will provide some pragmatic/semantic definitions of these notions. It should be clear that the definitions provided here are not shared by all linguists. Nevertheless, I believe it is good to have one clear definition for each of the notions rather than ten unclear ones. These definitions and characterizations will function as a pragmatic/semantic anchor while reading syntactic texts, which often do not define IS notions clearly. At the same time, however, we will not stick to our definitions dogmatically: in case the authors of the papers we read *do* define IS notions in their own way, we will respect their definitions.

2.1 Some preliminaries

2.1.1 Absolute or relative? Categorical or scalar?

- IS notions can be *categorical* and/or *absolute*; an expression is either focus or not, topic or not, etc.
- IS notions are inherently *scalar* and/or *relative*; an expression can be more given/accessible than another (Walker et al. 1998; Slioussar 2007, 2011), given relatively to something else (Wagner 2006), more contrasted than another (?)
- Even though the latter might be more realistic, it is exponentially more complex to handle. Therefore, we will stick to our baby discourse models where things can relatively comfortably be dealt with as absolute and categorical.

2.1.2 Two types of IS effects: pragmatics and semantics

Pragmatics

- In Krifka's (2007) terms: effects on common ground *management*
- No impact on truth-conditions.
- Impact on felicity conditions, presuppositions, implicatures, etc.

- (1) a. Joe drinks herbal TEA [neutral]
 b. Joe drinks HERBAL tea [for example, only, not BLACK tea, etc.]

Semantics

- In Krifka’s (2007) terms: effects on common ground *content*
- Impact on truth-conditions
- Typically, this happens when the sentence contains a quantificational or so-called “focus-sensitive” expression, such as *always, usually, only, etc.*

- (2) a. Joe always/usually/only drinks herbal TEA.
 b. Joe always/usually/only drinks HERBAL tea.

Assumptions

- Two extremes: Some believe that *all* IS-effects are truth-conditional; others believe that *none* IS-effects are truth-conditional (Vallduví 1992)
- Yet, let us work with the safe assumption that both pragmatic and semantic effects of IS exist.

2.2 Central IS notions

Literature to consult

- Krifka (2007, 2008): The SFB standard; you should definitely read that.
- Kruijff-Korbayová and Steedman (2003): The development (and the chaos) of IS notions.

2.2.1 Givenness

Alternative terminology

- old information, accessible information, salient information, presupposition, background, theme

Definition

- Givenness is defined in terms of generalized entailment (taken from Kratzer and Selkirk 2009)

- (3) *Givenness*
 A constituent α in a context c is *given* (represents given information) iff the discourse preceding c contains an antecedent β such that $[[\beta]]^c$ generalized-entails $[[\alpha]]^c$.

(4) *Generalized entailment*

For any a, b of any type, generalized entailment \Rightarrow is the smallest relation satisfying the following conditions:

- a. If $a = b$, then $a \Rightarrow b$.
- b. If $a, b \in D_t$, then $a \Rightarrow b$ if $a \rightarrow b$.
- c. If $a, b \in D_{\langle \sigma, t \rangle}$, then $a \Rightarrow b$ if $\forall c [c \in D_\sigma \rightarrow a(c) \Rightarrow b(c)]$.

- The three subcases above are designed for
 - a. Equivalence of two expressions of any type; yet, notice that individuals (*Bart, she, it*, etc.) are covered only by this clause.
 - b. Sentences. This is relatively uninteresting and probably won't even be needed.
 - c. Functional expressions including various predicates (*sleep, introduce, man*), adverbs (*slowly*), quantifiers (*at least five children*), quantificational determiners (*every*), etc.

Two subcases

1. Equivalence
2. Non-equivalence

Equivalence

- If α is given by virtue of the existence of some antecedent β , then α is equivalent to β if not only $\llbracket \beta \rrbracket \Rightarrow \llbracket \alpha \rrbracket$ but also $\llbracket \alpha \rrbracket \Rightarrow \llbracket \beta \rrbracket$, i.e. $\llbracket \alpha \rrbracket \Leftrightarrow \llbracket \beta \rrbracket$.
- This subtype of givenness is actually what is often meant by givenness.
- Examples

- (5)
 - a. *Mary* is equivalent-given by virtue of there being an antecedent *Mary*
 - b. *run* is equivalent-given by virtue of there being an antecedent *run*
 - c. ...

Non-equivalence

- If α is given by virtue of the existence of some antecedent β , then α is non-equivalent to β if only $\llbracket \beta \rrbracket \Rightarrow \llbracket \alpha \rrbracket$ is true, i.e. if $\llbracket \alpha \rrbracket \not\Rightarrow \llbracket \beta \rrbracket$ and $\llbracket \alpha \rrbracket \not\Leftarrow \llbracket \beta \rrbracket$.
- Examples

- (6)
 - a. *move* is non-equivalent-given by virtue of there being an antecedent *walk, run, swim*, etc.
 - b. *bird* is non-equivalent-given by virtue of there being an antecedent *eagle, ostrich, raven*, etc.

- Notice that there is always a latent contrast in non-equivalent givenness, namely a contrast based on subset/part-whole relationships.

2.2.2 Newness

Alternative terminology

- focus, information focus, presentational focus, rheme

Definition

- Newness is defined simply as the absence of givenness.

(7) *Newness*
A constituent α is *new* iff it is not given.

- Strictly speaking, newness is not a category, it is the *absence* of a category.

2.2.3 Contrast

Alternative terminology

- focus (in Krifka 2007, 2008), contrastive focus, rheme, ...

Definition

- Contrast is defined in terms of broadly conceived anaphora/cataphora combined with non-identity

(8) *Contrast* (again taken from Kratzer and Selkirk 2009)
A constituent α in a context c is *contrasted* (represents contrast) with an (explicit or implicit) antecedent β iff $\alpha \neq \beta$ and $\llbracket \beta \rrbracket^{c,o} \in \llbracket \alpha \rrbracket^{c,f}$.

(9) *Semantic values* (Rooth 1985; Kratzer 1991)

- Ordinary semantic value of α : $\llbracket \alpha \rrbracket^o = \llbracket \alpha \rrbracket^g$
where g is a standard variable assignment
- Focus semantic value of α : $\llbracket \alpha \rrbracket^f = \llbracket \alpha \rrbracket^{g,h}$
where h is a *distinguished* variable assignment, an assignment whose domain is the domain of distinguished variables (indices placed on anything contrasted) and whose value is the set of expressions of the same type as the indexed expression

- This notion of contrast is very weak. It includes examples like (10) (from Rooth 1992:80ff.), where *American (farmer)* and *Canadian (farmer)* count as contrasted constituents (with respect to each another), even if there is no *further operation* (such as exclusion of alternatives) is performed on the contrastive set. The example also

shows that the notion of contrast is independent of the notion newness, since the whole sentence is new but only parts are contrasted.

- (10) Context: A beginning of a joke
An AMERICAN farmer spoke with a CANADIAN farmer.

2.2.4 Background

Alternative terminology

- theme, ...

Informal definition

- Like newness, background is defined negatively:

- (11) *Background*
Background is the non-contrasted part of sentence.

- Notice: Background need not be a constituent.

2.2.5 Sentence topic

Alternative terminology

- aboutness topic, ...

Informal definition

- Sentence topic is commonly assumed to correspond to some specific/definite DP within a sentence.

- (12) *Sentence topic* (in the tradition of Reinhart 1981)
The sentence topic T of some sentence $[S \dots T_x \dots]$ is an expression which denotes a salient discourse referent and whose “file card” is updated by uttering S by the addition of $\lambda x. \llbracket S \rrbracket(x)$.

- Notice: Topics are always given. In a way, topics are “recruited” from the set of given expressions.

2.2.6 Comment

Alternative terminology

- ...

Informal definition

- Comment is a “sentence minus topic”.

- (13) *Comment* (in the tradition of Reinhart 1981)
 Comment is the property created by replacing the topic by a lambda-bound variable. It is the property which is added to the file card of the topic.

2.2.7 Discourse topic**Alternative terminology**

- question under discussion, current question, ...

Definition

- Discourse topic is the issue/question under discussion (Vallduví 1992; Roberts 1996), or, in the terminology of Beaver and Clark (2008) the current question.
- In formal terms and with von Fintel (1994), we can define the {current} question {under discussion} as a partition of the set of possible worlds (actual-world candidates); cf. Groenendijk and Stokhof (1984).

- (14) *Discourse topic* (after von Fintel 1994)
 Discourse topic is a salient partition of the common ground.

- The above definition is designed mainly for simple question-answer pairs. However, one can also imagine using it for questions whose partition is not that clear and which therefore call for being divided into a number of (implicit) subquestions (cf. Roberts 1996).

- (15) A How did you make the goulash?
 B Well, the basic ingredients are beef, onion, and powder paprika, you cut the onion into small pieces, ...

2.3 Summary

- We have the following categories, some of them in pairs:
 - Given - New
 - Contrast - Background
 - Sentence topic - Comment
 - Discourse topic (- Answer)
- Let’s analyze the following discourse (adapted from von Fintel 1994):

- (16) A What about John? What did he bring?
 B John brought drinks.

- Where's focus!?

2.4 Further IS-related issues

2.4.1 Newness vs. contrast

- Is *John* in (17B) contrasted or simply new? Is there any difference between the contrast (if any) on *John* in (17B), where *John* corresponds to the short answer to the question in (17A), and *Sue* in (18B), where *Sue* does not correspond to a short answer to the question in (18A).

- (17) A Who burnt the house?
 B JOHN burnt the house.

- (18) A Why is Lisa crying?
 B Only her friend SUE was selected.

2.4.2 All-given sentences

- Sometimes, all the (proper) subparts of a sentence are given. E.g. in (19B), *John* is given and *spilled the coffee* is also given. Yet, *John spilled the coffee* is not given. These examples make it clear that accent placement in English is not really governed by newness, but rather by contrast. In particular, in all-given sentences, it is the contrasted constituent which receives pitch accent.

- (19) A Who spilled the coffee? John or Mary?
 B JOHN spilled the coffee.

- These issues are fairly complicated and also not so easy to formalize. I refer those who are interested mainly to Schwarzschild (1999) and Wagner (2006) (and wish good luck reading).

2.4.3 Contrastive topics

- The basic above-defined IS-categories are typically not complementary and can combine. We already saw this in some examples above. The most discussed famous notion is the one of contrastive topic (see mainly Büring 1997, 2003), where contrast and topichood (or more generally givenness) combine within one constituent and there is another contrasted (focused) element in the sentence.

- (20) A What did John bring?

- B Well, JOHN brought DRINKS [but the question really is what MARY brought].

2.4.4 Exhaustive focus

- Exhaustive focus is a contrasted constituent associated with (a covert) *only*.

(21) *Exhaustive focus*

Given a background β , a contrasted expression α is exhaustive focus if $\llbracket \beta \rrbracket(\llbracket \alpha \rrbracket) = 1$ and $\forall x[x \in \llbracket \alpha \rrbracket^f \wedge \llbracket \beta \rrbracket(x) = 1 \rightarrow x = \llbracket \alpha \rrbracket]$

- An exercise: Which of the following answers contain an exhaustive focus?

(22) Context: Family Brown has three members: Lisa, Paul, and Mark.

Q Who from the Browns attended the funeral?

A All of them attended the funeral.

B Lisa attended the funeral.

C I know that Mark attended the funeral, but I'm not sure about the others.

D None of them attended the funeral.

E Only Paul attended the funeral.

2.4.5 Identification focus

- The notion of identification focus was introduced by to account for the behavior of constituents fronted to an immediately preverbal position in Hungarian.

(23) *Identification by exclusion* (adapted from Kenesei 1986; É. Kiss 1998)

Given a background β , a contrasted expression α bears identification focus if $\llbracket \beta \rrbracket(\llbracket \alpha \rrbracket) = 1$ and $\neg \forall x[x \in \llbracket \alpha \rrbracket^f \rightarrow \llbracket \beta \rrbracket(x) = 1]$. Identification focus is also associated with a presupposition that at least one alternative makes the background true.

- An exercise: Which of the following answers contain an exhaustive focus?

(24) Context: Family Brown has three members: Lisa, Paul, and Mark.

Q Who from the Browns attended the funeral?

A All of them attended the funeral.

B Lisa attended the funeral.

C I know that Mark attended the funeral, but I'm not sure about the others.

D None of them attended the funeral.

E Only Paul attended the funeral.

- A question: What is the relation between exhaustive focus and identification focus? Is one a subcase of the other?

2.4.6 Narrow vs. broad focus

- The attribute *narrow/broad* says how big the structure is which is in “focus”, in the sense of being new or contrasted. Typically, broad focus is used to designate VP/predicate focus or TP/CP/proposition focus, while narrow focus is used to designate DP/NP/AP focus, sometimes called “constituent focus” or “argument focus”.
- In the framework introduced above, the size of the focused constituent has no direct theoretical relevance. The important thing is that it can be incorporated, in particular, the framework is independent of and compatible with new/contrasted expressions of various syntactic sizes.
- In some other frameworks (e.g. Lambrecht 1994), narrow focus is identified with contrast and broad focus with plain newness.

2.4.7 Presupposition

- Some have argued that presupposition is relevant for IS; see Geurts and van der Sandt (2004) for recent discussion (but see also the criticism in the same volume, e.g. Kratzer 2004, Jacobs 2004).
- However, under a much more standard notion of a presupposition, it is a proposition conventionally associated with some lexical item, i.e., it is a *static* rather than *dynamic* property.

- (25) a. Two cats came into the house.
b. #The cat started purring.

$$(26) \quad \llbracket \text{the} \rrbracket = \lambda P : \underline{|\{x : P(x)\}|} = 1. \iota x [P(x)]$$

- (27) a. John has never smoked in his life.
b. #Yesterday, John stopped smoking.

$$(28) \quad \llbracket \text{stop} \rrbracket = \lambda P \lambda x : \underline{\exists t [t < t_R \wedge P(x)(t)].} \neg P(x)(t_R)]$$

- What is the relation between givenness and presupposition? Givenness is both stronger and weaker than presupposition.
 - *Why stronger:* Given expressions are anaphoric expressions, unlike presupposed expressions. E.g. the proper name *John* always (irrespective of the context) comes with the presupposition of existence of some individual called John. However, *John* is not always given: it is only given if there is a coreferent antecedent in the context. In (29), *John* comes with a presupposition, both in (29A) and (29B), however, only in (29B) is *John* also given.

- (29) A Why don't you consult JOHN about that issue?
B I already SPOKE with John.

- *Why weaker*: Given expressions need not satisfy the presupposition of existence. E.g. the DP *a secretary* can be given even if there is no individual secretary in the context. In (30B), *a secretary* is given but is not associated with any presupposition.

- (30) A Why don't you ask your secretary?
 B I don't HAVE a secretary.

2.4.8 More?

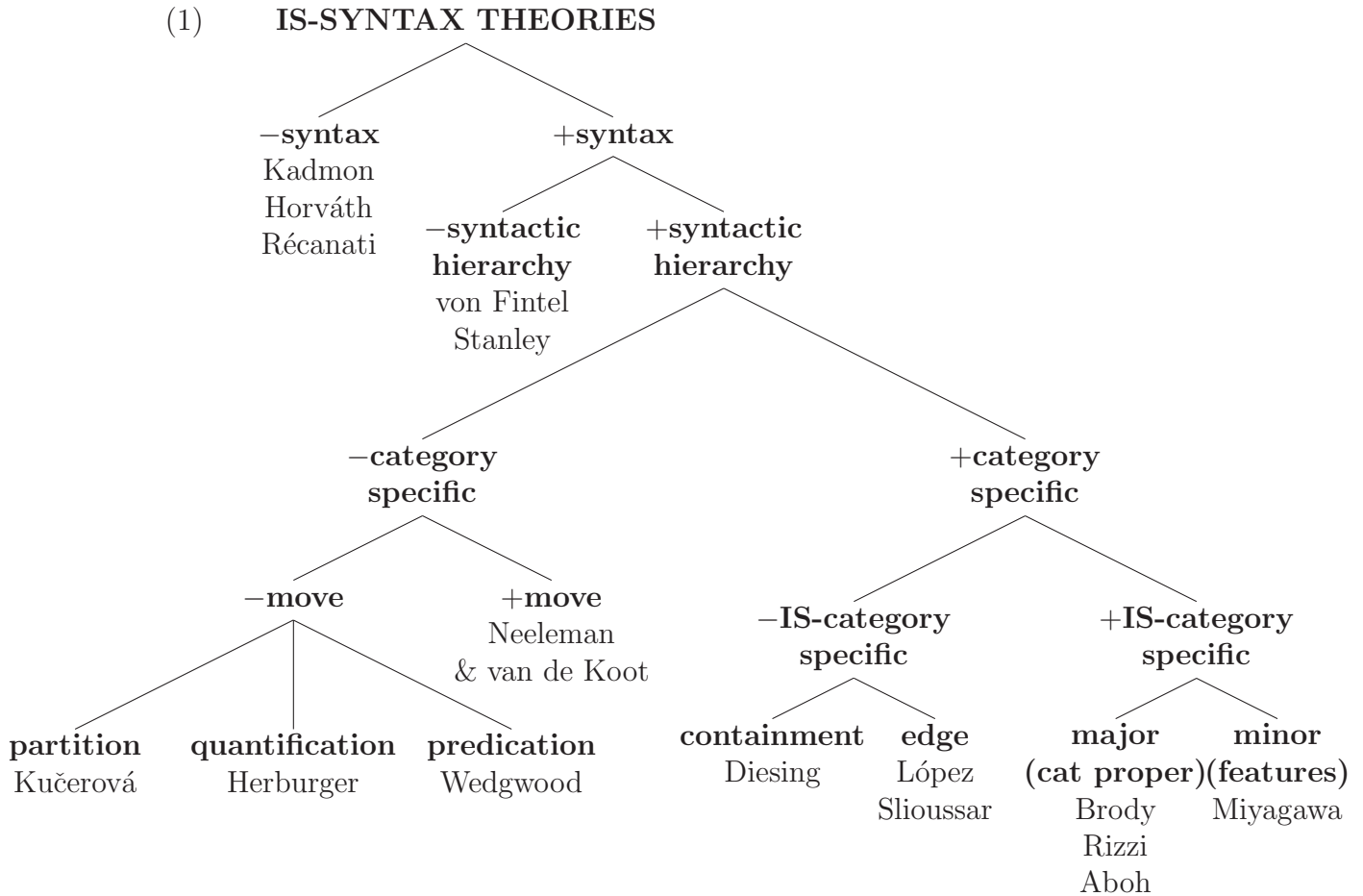
Session 3

Theories of the IS-syntax relation

The main goal of this session will be to draw a landscape of theories of IS-syntax relation. We will see that existing theories can be divided into groups and subgroups according to a number of criteria: Does the syntactic module have access to IS categories? If yes, does it represent these categories as syntactic categories or syntactic features? Are IS categories represented in terms of syntactic operations? Or do configurations suffice? Using these and other criteria, theories can be ordered with respect to what predictions they make. The hope is that having the theories laid out in a systematic manner will help us to evaluate them. While reading papers, we keep the landscape in the back of our minds and try to identify the claims that the papers make with the particularities of the landscape. Ideally, we will “zoom into” its subparts and draw the details that come with each of the theories.

3.1 Overview of the theories

- From the seminar plan:
 1. Syntactic category-based theories (Bródy 1990, 1995; Rizzi 1997; Aboh 1998; Abels and Muriungi 2008, etc.)
 2. Syntactic feature-based theories (Bošković 1999; Miyagawa 2007, etc.)
 3. Syntactic operation-based theories (Chomsky 1977; Tancredi 1990; Drubig 1994; Krifka 2006; Neeleman and van de Koot 2008, etc.)
 4. Syntactic cycle-based theories (à la Diesing 1992, López 2009, Slioussar 2011)
 5. Syntactic configuration-based theories (Kučerová 2007)
 6. Quantification-based theories (Herburger 2000)
 7. Predication-based theories (Wedgwood 2003, 2009)
 8. Special module-based theories (Vallduví 1992)
 9. Free variable-based theories (von Stechow 1994, à la Stanley 2000)
 10. Syntax-free theories (Kadmon 2001, Horváth 2010, à la Récanati 2002)
- Let’s put these theories in some sort of relation, let’s use them to draw a landscape



- **Null hypothesis in a modular system of grammar**

- (2)
- a. Information structure notions are pragmatic notions.
 - b. Pragmatics is a module distinct from syntax.

c. Syntax has no access to information structure notions.

- Under this view, the burden of evidence lies on the theories which deviate from the conclusion (2c), in particular all the theories dominated by [+syntax]. Generally, the more a theory deviates from (2c) (the more + attributes it has), the more effort one must make to defend the theory.
- The problem of many syntactic theories from the past 20 to 30 years is that they often *presupposed* the accessibility of IS notions to syntax. The possibility to construct relatively powerful IS theories without reference to syntax has mainly been explored by semanticists and pragmaticists (Rooth 1992; von Stechow 1994; Schwarzschild 1999) but has mostly been ignored by syntacticians (perhaps with the consistent exception of Chomsky, who has repeatedly argued that “stylistic” operations are not genuinely syntactic). Unfortunately, the communication between formal syntacticians and formal pragmaticists/semanticists has been rather scarce, and the syntacticians generally have

not felt the need to see whether their syntactic machinery cannot be removed in favor of more principled pragmatic/semantic instruments. Only relatively recently, the evidence in favor of having IS notions in the syntax has been revisited by syntacticians and has been put into doubt, e.g. by Horváth (2010), but also, and very prominently so, by people in our department, see Fanselow and Lenertová (2011); Fanselow (to appear); Wierzba (2011).

3.2 Using the tree

- What can we read off the tree in (1)?
- (3) The set of attributes of a theory is a superset of the set of nodes which dominate it.
- Two examples below:
 - Rizzi (1997): { [+syntax], [+syntactic hierarchy], [+syntactic category], [+IS-specific syntactic category], [major syntactic category], Foc/Top }
 - López (2009): { [+syntax], [+syntactic hierarchy], [+syntactic category], [−IS-specific syntactic category], [syntactic edge], phase edges }
- Note that the tree provides us with entailment relations.
- (4) A theory with an attribute A has an attribute B iff B dominates A .
- Consequently, it's sufficient to write
 - Rizzi (1997): [major syntactic category], Foc/Top
 - López (2009): [syntactic edge], phase edges

3.3 Closer specification of the attributes

3.3.1 [−syntax]

- One of the problems for these theories is that IS affects truth-conditions.
- (5)
 - a. There is no IS in syntax.
 - b. IS affects truth-conditions.
 - c. Truth-conditions are pragmatic.
- Récanati (2002, 2010) has been developing a theory which can accommodate the conclusion in (5), namely *truth-conditional pragmatics*. I'm not sure whether he deals with information structure, but his work should be directly relevant.

- **Prediction:** No IS notions should translate or be sensitive to any syntactic notions, such as syntactic relations (sisterhood, dominance, etc.) or syntactic categories (VP, DP, etc.).

3.3.2 [+syntax], [−syntactic hierarchy]

- IS is represented in the syntax, but only “minimally”, i.e. most of the properties that we normally attribute to the syntactic module are absent.
- Kratzer (1991); Rooth (1992); von Stechow (1994); Schwarzschild (1999): The only representation of IS in syntax is the presence of unstructured marking of contrast and givenness at LF, essentially by means of indices—free variables, whose values are supplied contextually.

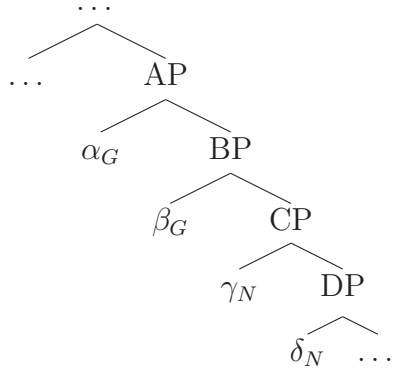
- (6)
- JOHN showed up.
 - $[_{TP} \text{John}_f [_{VP} \text{showed up}]]$
 - $[[[_{TP} \text{John}_f [_{VP} \text{showed up}]]]^g = \text{showed.up}(j)$
 - $[[[_{TP} \text{John}_f [_{VP} \text{showed up}]]]^h = \{\text{showed.up}(h(f)), \text{ where } h \text{ is some (distinguished) variable assignment}\}$

- **Prediction:** IS categories are present in syntax only in a “passive” manner and in a non-hierarchical way. They are essentially pragmatic/semantic entities—unstructured indices/variables—which are adjoined to some particular constituent in the syntactic representation. They either cannot enter syntactic relations at all or only the basic ones (sister and dominate) and have no syntactic properties otherwise—no syntactic category, no ability to participate in syntactic operations, etc.

3.3.3 [+syntactic hierarchy], [−category-specific], [−move]

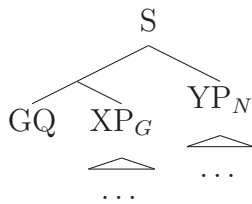
- A conventional (grammatical) association between IS categories and syntactic hierarchies is possible, however, no such association is required for syntactic categories or syntactic operations (e.g. movement).
- At least three types of these theories can be distinguished:
 1. *Syntactic partition-based theories:* Kučerová (2007) postulates a rule that at LF (i.e. in syntax), no given constituent can be c-commanded by a non-given constituent. Thus, LFs are only well-formed if they have the following shape:

- (7) Given-new syntactic bipartition



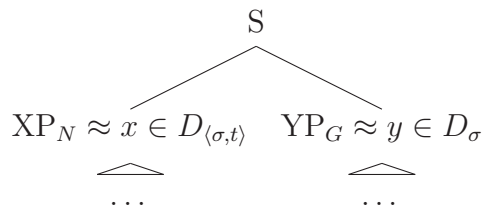
2. *Generalized quantification-based theories:* Herburger (2000) postulates that the given (or “background-entailed” in her terms) constituent corresponds to quantificational restriction at LF, while non-given (not “background-entailed”) constituent corresponds to the quantificational nucleus at LF.

- (8) Generalized-quantifier tri-partition



3. *Predication-based theories:* Wedgwood (2003) postulates that “focus” (contrasted or new constituent) always corresponds to the predicate and background/topic/given part to the subject.

- (9) Predication structure



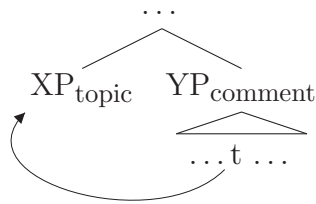
- **General prediction:** IS categories are expected to “trigger” syntactic reorderings which would facilitate the hierarchy of constituents required by IS. In other words, syntactic categories which are “marked” for contrast, new, given, etc. are expected to undergo syntactic operations, without necessarily bearing syntactic IS-features.

3.3.4 [+move]

- A conventional (grammatical) association between IS categories and syntactic hierarchies is possible. No association is postulated between IS categories and syntactic categories. However, a conventional association is postulated between IS categories and the syntactic operation of movement.

- Neeleman and van de Koot (2008) argue that a syntactic movement of an XP marks the sister of XP (in its moved position) as belonging to a particular IS category.

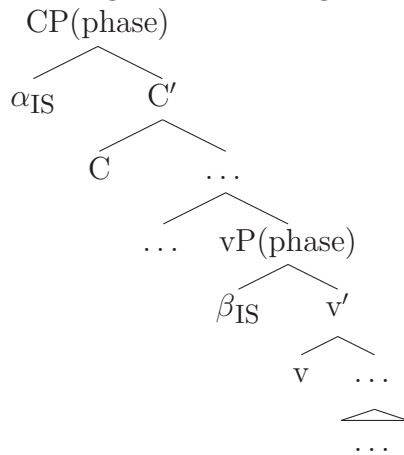
(10)



3.3.5 [+category specific], [−IS-category specific]

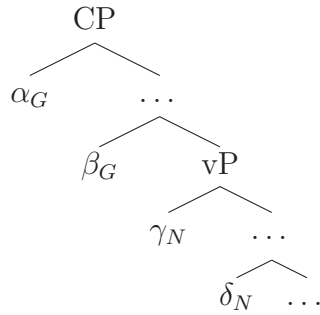
- A conventional (grammatical) association between IS categories and syntactic categories such as vP/VP, CP is possible.
- At least two types can be distinguished:
 1. *Category edge-based theories*: López (2009) proposes that at least some IS categories require licensing “at the edge” (in the specifier) of particular syntactic categories, in particular at the edge of *phases*—vPs and CPs.

(11) IS-categories at the edge of syntactic categories



2. *Category containment-based theories*: Diesing (1992) has argued that some IS-related categories require licensing by either being or not being contained within a specific syntactic category, roughly the vP. Her model was followed by some (e.g. Biskup 2011) and applied for purposes of IS-proper. The idea is that the presence within vP (the first phase) corresponds to non-givenness/focus/....

(12) IS-categories licensed by containment

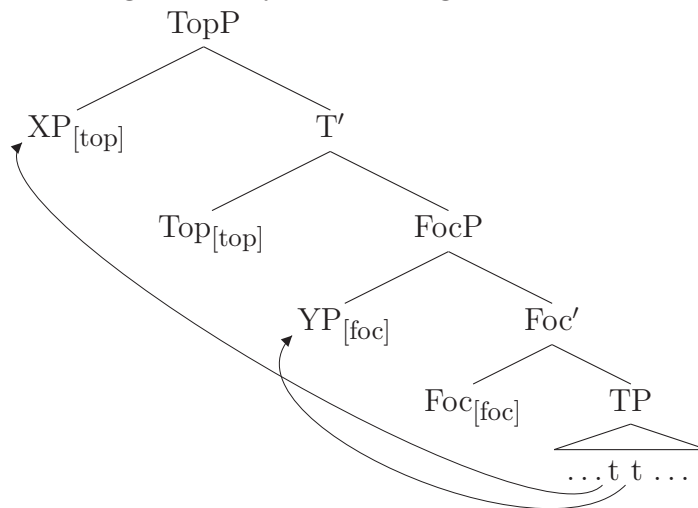


- **General prediction:** Some IS categories are expected to be licensed only if certain syntactic categories are present. Syntactic operations might be needed in order to facilitate particular syntactic configurations required by some IS category.

3.3.6 [+IS-category specific]

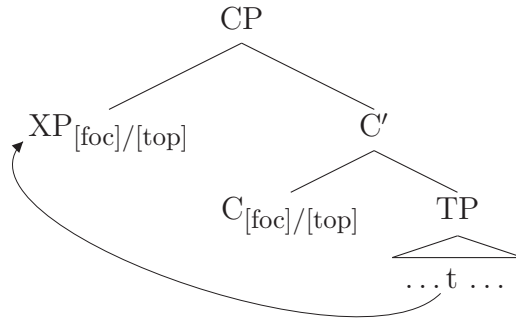
- IS categories are equated with syntactic categories. Just like there are syntactic categories of a verb (V), determiner (D), complementizer (C), etc., there are syntactic categories/features such as Focus and Topic.
- Two basic approaches exist:
 1. *Major category-based theories:* Bródy (1995); Rizzi (1997) argue that IS-categories can be major categories, i.e. they have the full power of projection, selection, etc.

(13) IS-categories \approx Syntactic categories



2. *Feature-based theories:* Many linguists assume that IS-categories cannot be major categories, but they can be features, and hence can enter syntactic operations such as Agree.

(14) IS-categories \approx Syntactic features



- **General prediction:** IS-categories should be subject to all standard syntactic relations, operations, and restrictions. They should have specific selectional requirements, have a particular position in the syntactic hierarchy, they should move, agree, etc.

3.4 Entailments in predictions

- As I tried to show above, the attributes of particular IS-syntax theories can be translated in a systematic way to the predictions that these theories make. In a similar fashion, the entailment (subset/superset) relation between the set of attributes that each theory comes with can translate to an entailment relation between predictions. In the general case (unless additional restrictions/attributes are in place), the following holds:

(15) A theory $T1$ predicts everything (and perhaps more) that a theory $T2$ predicts iff the set of $T1$'s attributes forms a superset of $T2$'s attributes.

- For example, if Kučerová's (2007) theory is "stripped off" the specific predictions following from the theory being category-insensitive, Rizzi's (1997) theory predicts all and more empirical phenomena as/than Kučerová's theory.

Session 4

Summary and discussion

The main question of this seminar was: How do information structure notions map onto syntactic notions?

4.1 The papers we read

4.1.1 Rizzi (1997)

IS notions

- *Focus-background*
- *Topic-comment*
- The notions are not independently and clearly defined.
- Focus bears pitch accent and must not be resumed by a resumptive pronoun.
- Topic bears no pitch accent and is typically resumed by a resumptive pronoun.
- Background must be given/presupposed.
- Comment is unconstrained.

Claims

- IS notions map to syntactic categories Foc and Top.
- SpecFocP \leftrightarrow focus; complement of Foc \leftrightarrow background
- SpecTopP \leftrightarrow topic; complement of Top \leftrightarrow comment

Evidence

- Italian, marginally other languages (English, Flemish, Portuguese, etc.)
- Word order, pitch accent, clitic doubling, recursion effects (Foc in comment but no Top in background), adjacency effects on Case, PRO, traces, anti-adjacency effects of adverbials

4.1.2 Abels and Muriungi (2008)

IS notions

- *Focus*: defined in terms of Q-A pairs
- *Exhaustive focus*: Discussion and tests based on É. Kiss (1998)
- *Anti-exhaustive focus*

Claims

- IS notions map to syntactic categories of the Foc-type. There are three focus heads: [Foc1 [Foc2 [Foc3 ...]]]
- Foc3 → Rooth’s (1992) \sim -operator (focus anywhere in the c-command domain); SpecFoc3: the closest DP (the subject)
- Foc2+Foc3 → marker of cyclicity; SpecFoc2: a focus-related DP or a trace of such a DP
- Foc1+Foc2+Foc3 → marker of exhaustivity; SpecFoc2 in the presence of Foc1: exhaustive focus

Evidence

- Kiitharaka, marginally two related languages (Kikuyu and Kirundi)
- Q-A pairs, exhaustivity tests, word order, Foc-head morphophonology, pre-nominal (Foc1+Foc2+Foc3) vs. pre-verbal morphology (Foc2+Foc3 or Foc3)

4.1.3 López (2003)

IS notions

- *Information focus/rheme*: “[...] constituents not displaced in any way are neither presuppositional nor contrastive: they are what is usually called plain information focus or rheme.”
- *Contrastive focus*: L. relies mainly on Rooth (1992); É. Kiss (1998); Vallduví and Vilkuna (1998) and says that “contrastive foci evoke a set of alternatives that can be substituted for the focused constituent.”
- *Presupposition*: To be presuppositional is to “hook up with an antecedent that can be found in the discourse or in the immediate context.”
- He also implicitly assumes contrastive topics, which according to him is realized by CLLD in Catalan and which is a combination of contrast and “givenness” of the contrastive set.

- (Anti-contrast, Anti-presupposition)

Claims

- “There is a one-to-one mapping between syntactic derivation and pragmatic interpretation.”
- The pragmatic values presupposition and contrast are linguistic features, assigned to EPP features by an interpretive component called pragmatics; pragmatics is assigns features each time a phase is completed; assigned pragmatic features remain with the constituent even as it is involved in further syntactic operations; assigned features cannot be altered.
- No movement \leftrightarrow All new sentence
- Focus fronting (movement to SpecFinP) \leftrightarrow Contrastive focus on SpecFinP, Anti-contrast on the complement of Fin
- Clitic right dislocation (CLRD) (movement to SpecvP) \leftrightarrow Presupposition on SpecvP, Anti-presupposition on the complement of v
- Clitic left dislocation (CLLD) (CLRD + movement to SpecFinP) \leftrightarrow a combination of the two above

Evidence

- Catalan
- Word order, clitic doubling, various other tests to support partial claims (mostly unrelated to IS proper)
- For CLLD and CLRD, he gives Q-A pairs.
- For FF, the only diagnostics is pitch accent and the absence of clitic doubling (like in Rizzi 1997). The postulated interpretive (contrastive) effect is not empirically supported.
- Some combinations of CLLD, CLRD, and FF (subextractions) are predicted not to exist. These predictions are explored and borne out:
 - FF out of FF
 - CLLD out of CLLD
 - *FF out of CLLD
 - *CLLD out of FF
 - CLLD out of CLRD
 - *CLRD out of CLLD

4.1.4 Wedgwood (2006)

IS notions

- *Focus*: New, asserted information
- *Narrow focus*: Focus on a non-verbal element.
- *Broad focus*: Focus on some verbal projection.
- *Topic*: “The broader conception of a topic is thus of a theta-marked subject of predication which requires a temporally anchored event to be predicated of it.”
- *Topic-comment*: Broad focus asserted about a single topical element.
- *Presupposition*: Not very clear definition, also not explicitly used in the analysis.

Claims

- Narrow focus → “main predicate” of the sentence
- Broad focus → any verbal element (verb, aspect marker, tense) of the focus is the main predicate (yet, in negated statements, tense must be the main predicate); the idea is that any verbal element can “stand for” the whole verbal projection.
- Main predication “is the act of predication which creates a proposition out of the description of an event.” Main predication is to be found in every sentence, irrespective of whether it is negated or not, whether there is narrow or broad focus.
- Logically, the main predicate is a predicate of events and the rest is a particular, discourse-salient event. It is assumed that every constituent (verbal or nominal) can be construed as an event description or a particular event.
- Tense has a special status in this theory in that the tense itself or whatever is linearized before the tense marks the boundary between the main predicate (focus or subpart of focus) and the background.

Evidence

- Hungarian
- Word order, pitch accent assignment
- No contexts or Q-A pairs are provided.

4.1.5 Neeleman and van de Koot (2008)

IS notions

- *Focus*: Contrastive focus in the sense of Rooth (1992), often with exclusive implications (citing É. Kiss 1998)
- *Topic*: Three functions: (i) introduction of a new discourse topic, (ii) narrowing down the current discourse topic, or (iii) changing the discourse topic. These functions also include contrastive topic.
- *Discourse topic*: not defined
- *Background*: not defined (syntactically the sister of focus)
- *Comment*: not defined (syntactically the sister of topic)
- *Discourse-anaphoric*: they cite some references but don't give an explicit definition, apart from saying that it corresponds to "old information"
- *New-information focus*: not discourse anaphoric

Claims

- Focus and topic completely are independent of syntax
- Discourse-anaphoricity partly conditioned by syntax
- Sister of fronted focus → background
- Sister of fronted topic → comment
- DP in a marked A-position → discourse-anaphoric

Evidence

- Dutch
- Word order (A-bar scrambling, A-scrambling; plenty of tests to distinguish between the two), focus-associating particles
- Q-A pairs and contexts are used systematically to bring out the required interpretations

4.1.6 Kučerová (2011)

IS notions

- *Givenness*: Existential presupposition

Claims

- Given elements \rightarrow in the scope (= outside of the c-command domain) of the G-operator
- Given elements must be syntactically marked as given. This is a consequence of the pragmatic principle Maximize Presupposition (Heim 1991).
- In a certain domain (a phase), no new (non-given) element can c-command any given element. As a consequence of that, given elements must undergo movement. This is modelled by postulating a recursive “G-operator” at LF, which marks the boundary between the given and new part of the tree.

Evidence

- Czech, marginally Serbo-Croatian and Russian
- Word order in a clause, word order in a coordination.
- Q-A pairs and contexts used systematically.

4.1.7 Herburger (2000)

IS notions

- *Focus*: The main entailment of the sentence. Not really properly defined.
- *Backgrounded focal entailment*: The non-focused part

Claims

- All non-focused material in the scope of some adverbial quantifier (quantifier over events) is also interpreted in the restriction of the quantifier.

Evidence

- English, marginally Spanish and German
- Pitch accent, word order, focus-associating expressions (conventionally or freely), truth-conditional effects
- Q-A not used; but this is not that bad, since Herburger is mainly interested in truth-conditional and not discourse effects of focus

4.2 Discussion

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