

Information Structure

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Information structure as information packaging

- ▶ **Information structure** (IS): a theory on communication, which implies a continuous change of the common ground
- ▶ **Common ground** : information mutually known to be shared and continuously modified in communication
- ▶ **Information packing**: describes the possibilities in which information is presented
- ▶ IS is not about the content (=semantics) of the utterance, but about the way it is presented.

CG content and CG management

- ▶ Communication always takes place against a background, the **Common Ground**.
 - ▶ The CG contains the shared assumptions of speaker(s) and hearer(s); it is **a set of propositions**.
 - ▶ During a conversation, the interlocutors add more and more propositions to the CG.
 - ▶ Utterances require the CG to be in a certain way, i.e. to contain certain propositions.
 - ▶ These required propositions are called **presuppositions**.
- (1)
- a. I have a cat, and I brought my cat to the vet.
 - b. #I brought my cat to the vet and I have a cat.

CG content and CG management

- ▶ Speakers don't just utter declarative clauses randomly at each other.
- ▶ We also make conversational moves that indicate that we want the CG to develop in a certain direction, without adding a new proposition to the CG.
- ▶ These moves are called **CG management**.
- ▶ We may ask questions, give full or partial answers, put emphasis on certain elements of the common ground etc.
- ▶ Thus, we influence not only which information we want to add to the CG but also the way in which this information is presented.

CG content and CG management

- (2) CG = $\{\emptyset\}$
- (3) A: 'I have a sister.'
CG = $\{p: A \text{ has a sister } x. \}$
- (4) A: 'She works as a teacher.'
CG = $\{p: A \text{ has a sister.}, q: x \text{ works as teacher. } \}$
- (5) B: 'Where does she live?'
CG = $\{p: A \text{ has a sister.}, q: x \text{ works as teacher. } \}$
CG-M = B wants A to add to CG information of where x lives
- (6) A: 'She lives in Frankfurt.'
CG = $\{p: A \text{ has a sister.}, q: x \text{ works as teacher.}, x \text{ lives in Frankfurt } \}$

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Focus basics

Krifka, Manfred (2008) Basic Notions of Information Structure. Acta Linguistica Hungarica 55(3/4): 243–276.

- ▶ One major IS-category is focus.
- ▶ Focus indicates the presence of **alternatives**.

- (7) a. Why are you late?
b. {because his alarm didn't ring, because he forgot about this class, because his train was late, because his train was cancelled, because he had see someone else...}
- (8) a. I am late [_{CP} because my train was cancelled]_{FOCUS}.
b. {because his alarm didn't ring, because he forgot about this class, because his train was late, because his train was cancelled, because he had see someone else...}

Focus basics

- ▶ This definition of focus is independent of the language-particular way focus is marked.
 - ▶ Different types of marking might indicate different types of focus but all of them involve the presence of alternatives in one way or another.
 - ▶ Other notions of focus are either too imprecise (focus as *highlighting* or *most important*) or just wrong, i.e. focus as being **new information**, see (9).
- (9)
- a. Who stole the cookie, John or Mary?
 - b. JOHN stole the cookie.

Pragmatic focus

- ▶ Focus by itself does not change the truth conditions of a sentence.
- ▶ In (10), both sentences are true iff Sara sold her car.

- (10) a. Sara sold her CAR.
b. SAra sold her car.

- ▶ It does not change the CG content, so it is related to CG management.
- ▶ The classic case of **pragmatic focus** is to highlight the part of an answer to a constituent question that corresponds to the wh-part.
- ▶ This is called **question-answer congruence**.

- (11) Q: Who stole the cookie?
A: PETER_F stole the cookie.
A': #Peter stole the COOKIE_F.

Pragmatic focus

- ▶ QA-congruence follows from the semantics that is assumed for questions and their corresponding answers.
- ▶ The meaning of a question is the set of its possible answers (see above).

- (12) a. Who stole the cookie?
b. $\{\text{STOLE}(\text{COOKIE})(X) \mid X \in \text{PERSON}\}$

- ▶ Thus, questions are also sets of alternative propositions, differing in the value for the variable introduced by the wh-element.

Pragmatic focus

- ▶ In the answer, this is very similar.
- ▶ The alternatives introduced by focus are not part of the ordinary meaning (i.e. do not have an effect on the truth conditions) but of the focus-semantic meaning.

- (13)
- [PETER]_F stole the cookie.
 - Ordinary meaning: STOLE(COOKIE)(PETER)
 - Focus meaning: {STOLE(COOKIE)(X) | X ∈ ENTITY}

- ▶ Question and focus-induced alternatives are part of the CG management, because they do not add a proposition to the CG.
- ▶ The question indicates how the speaker wants the CG to develop, and the focus in the answer helps to relate it to the question.

Pragmatic focus

- ▶ Another pragmatic use of focus is for **corrections** and **confirmations**.
- ▶ For corrections, the alternatives need to include a proposition that has been proposed before, and then states that the expressed alternative is the only one that holds.

- (14) a. Mary stole the cookie.
b. No, PETER_F stole the cookie.

- ▶ For confirmations, the wider CG needs to consider other possibilities and the answer then excludes those.

- (15) a. Mary stole the cookie.
b. Yes, MARY_F stole the cookie.

Narrow vs. broad focus

- ▶ Sometimes a particular focus accent can lead to different **focus domains** known as focus projection.
- ▶ (45) is called **narrow focus**, the other examples are different stages of **broad** or **wide** focus.

- (16) Q: What did Mary buy a book a about?
A: Mary bought a book about [BATS]_{Foc}.
- (17) Q: What did Mary buy?
A: Mary bought [a book about BATS]_{Foc}.
- (18) Q: What has been happening?
A: [Mary bought a book about BATS]_{Foc}.

Verum focus

- ▶ Another well known focus type is **verum focus**.
- ▶ Verum focus is focus on the truth value of a sentence.
- ▶ In English, this is either focus on the negation or on T (with do-support or auxiliary).

- (19) a. Mary stole the cookie.
b. Mary did NOT steal the cookie.

- (20) a. Mary didn't steal the cookie.
b. Mary DID steal the cookie.

- ▶ The expression of verum focus varies cross-linguistically and is very under-researched cross-linguistically!

Open and closed focus

- ▶ So far, all instances of focus involved an open alternative set, i.e. the set was only restricted by our world knowledge.
- ▶ However, the alternative set can also be overtly restricted.
- ▶ This type of focus is called **closed focus**.

- (21) a. What do you want to drink, coffee or tea?
b. I want [TEA]_F.

Contrastive and exhaustive focus

- ▶ Many languages code **contrastive** and **exhaustive** focus differently from normal pragmatic focus (often also called "new-information focus", but see above).
- ▶ Contrastive focus contrasts the expressed alternative with one explicitly present in the common ground, see (22).
- ▶ Exhaustive focus indicates that the alternative expressed is the only alternative for which the proposition holds, see (23).

- (22) a. A: John wants coffee.
b. B: MARY wants coffee, too.

- (23) It's [JOHN and BILL]_F that stole a cookie.

Topics basics

- ▶ Another important IS-category is the **topic**.
- ▶ Imagine a topic to be the header of a file card to which information is stored during the conversation.
- ▶ This type of topic is called **aboutness topic**.
- ▶ The complement of the topic is called the **comment**.

- (24)
- [Aristotle Onassis]_{Topic} [married Jacqueline Kennedy]_{Comment}
 - [Jacqueline Kennedy]_{Topic} [married Aristotle Onassis]_{Comment}

Topics Basics

- ▶ This idea led to the following definition of topics:
- (25) The topic constituent identifies the entity or set of entities under which the information expressed in the comment constituent should be stored in the CG content.
- ▶ Similar to focus, the term topic has not been used in a consistent way to describe (25).
 - ▶ It has alternatively been called *subject*, *link*, or *theme*.
 - ▶ Especially the last term is problematic, as it comes from the distinction theme-rheme and equates topic with old information.
 - ▶ But topics don't necessarily express old information.
- (26) [A good friend of mine]_{Topic} [married Britney Spears last year]_{Comment}

Topics basics

- ▶ The **topic-comment dimension** is also often equated with the **focus-background dimension**.
- ▶ However, topics can contain focus (i.e. for contrastive topics) and the comment is not necessarily equal to the focus either.

- (27) a. When did [Aristotle Onassis]_{Topic} marry Jacqueline Kennedy?
b. [He]_{Topic} [married her [in 1986]_{Focus}]_{Comment}

- ▶ Therefore, the topic-comment dimension has to be kept apart from the focus-background dimension.

Topics basics

- ▶ Most sentences only have one topic.
- ▶ Multiple topics are possible (28), the question is how to handle this in the file card system.

(28) As for Jack and Jill, they married last year.

- ▶ Sometimes, sentences don't have any topics at all.
- ▶ These are called **thetic** or **all-new sentences**.
- ▶ In general, such sentences are answers to a question like 'What happened?'

(29) [[The HOUSE]_{Focus} is on fire]_{Comment}

Contrastive topics

- ▶ Topics that express a contrast are called **contrastive topics**.
- ▶ Contrastive topics are expressed with a rising accent (similar but not the same as a focus accent).
- ▶ They are often analyzed as a normal (aboutness) topic that contains a focus.
- ▶ Contrastive topics also introduce alternatives (presumably due to the focal part contained).

(30) A: What do your siblings do?

B: [My [SISter]_{Focus}]_{Topic} [studies MEDicine]_{Focus}, and
[my [BROther]_{Focus}]_{Topic} is [working on a FREIGHT
ship]_{Focus}.

Contrastive topics

- ▶ The typical reason for the use of CT is that of incremental answering in the CG management.
- ▶ In other words, CTs answer sub-questions of the original question under discussion.
- ▶ Very often, the general QUD is accommodated into CG management.

- (31) A: Where were you at the time of the murder?
B: [[I]_{Focus}]_{Topic} [was [at HOME]_{Focus}]_{Comment}
A': Who was where?

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Intonation languages: Accents

- ▶ Accents influence the interpretation of a clause.

- (32)
- Margaritas are a good source of **V**itamins.
 - Margaritas are a **GOOD** source of vitamins.
 - Marga**R**itas are a good source of vitamins.

- ▶ The sentences in (32) do not differ wrt. their truth values, but wrt. their information structure.
- ▶ They appear in different contexts. Proof: They represent answers to different questions.

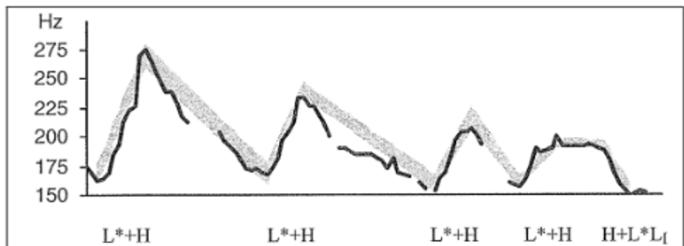
- (33)
- What are margaritas a good source of?
 - What kind of a source of vitamins are margaritas?
 - What is a good source of vitamins?

Intonation languages: Accents

- ▶ The different interpretations in (32) are a consequence of the different positions of the **nuclear accent**, a pitch accent which realizes the focus constituent.
- ▶ Pitch accents are audible modulations of the intonational contour which can be clearly isolated. In German and English, pitch accents are realized tonally. They consist of a high tone (H), a low tone (L) or a combination thereof (HL / LH).
- ▶ The nuclear pitch accent is the last pitch accent in the clause, thus in (32) the accents on VI, GOOD, and RI.
- ▶ The nuclear pitch accent is not always the phonetically strongest accent.

Intonation languages: Accents

- (34) *Der Maurer und der Lehrling wollen dem Werner in
DEF mason and DEF apprentice want DEF Werner in
Kamerun ein Lama malen.*
Cameroun a lama paint
'The mason and the apprentice want to paint a Lama
for Werner in Cameroun.'



Intonation languages: Default accent

- ▶ The graph on the last slide showed that each phrase receives an accent.
- ▶ But how do we know where to put an accent in a longer phrase?

- (35) pictures of Peter
- a. **P**ICtures of Peter
 - b. pictures of **P**Eter

- ▶ We saw that syntax plays an important role for the determination of the size of the focus.
- ▶ Syntax also plays an important role when it comes to the realization of the default accent.

Intonation languages: Default accent

- (36) a. **Stress XP**: Each phrase receives an accent.
b. The accent is assigned to the most deeply embedded word of an open word class (N, V, A).
c. The last accent is the default (or nuclear) accent.
- (37) **no branching nodes**
a. [NP **PIC**tures]
b. [VP **GREET**]
- (38) **branching nodes**: complement not an open class element
a. [NP **PIC**tures [PP of himself]]
b. [VP **GREET** [NP someone]]
- (39) **branching nodes**: complement an open class element
a. [NP pictures [PP of **PE**ter]]
b. [VP greet [NP **PE**ter]]

Intonation languages: Default accent

- ▶ Accent on the complement in a branching structure yields an accent of the whole phrase.
- ▶ This does not hold the other way round: if the heads *pictures* and *greet* were accented in (39), the complements would not receive an accent, in violation of (36-a).
- ▶ Head final languages (German): default accent is again the accent on the most deeply embedded open class element, which is not the last:

- (40) a. $[_{VP} [_{NP} \textit{die} \textit{SO}nne] \textit{sehen}]$
 the sun see
 ‘to see the sun’
- b. $\#[_{VP} [_{NP} \textit{die} \textit{Sonne}] \textit{SE}hen]$

Intonation languages: Narrow vs. broad focus

- ▶ Remember from above that focus can be narrow or broad.
- ▶ **narrow focus**: If a focus consists only of one word, the focus accent is realized on the metrically most prominent syllable of this word, see (41).

(41) Q: Who ordered shellfish?

A: [PEter]_F ordered shellfish.

- ▶ **wide focus**: If focus is larger than just one word, accent assignment follows the default rules: It is assigned to the most deeply embedded word of an open word class (N, V, A) within the focus phrase, see (42).

(42) Q: Who ordered shellfish?

A1: [My neighbour next **DOOR**]_F ordered shellfish.

A2: [The boy at the table at the **WIN**dow]_F ordered shellfish.

Intonation languages: Narrow vs. broad focus

- ▶ In (42) the expression of focus is on the head noun, but projects to the complex NP. This phenomenon is called focus projection.
- ▶ Focus projection happens according to certain rules:

(43) **Basic Focus Rule**

An accented word is F-marked.

(44) **Focus Projection**

- F-marking of the head of a phrase licenses F-marking of the phrase.
- F-marking of an internal argument of a head licenses the F-marking of the head.

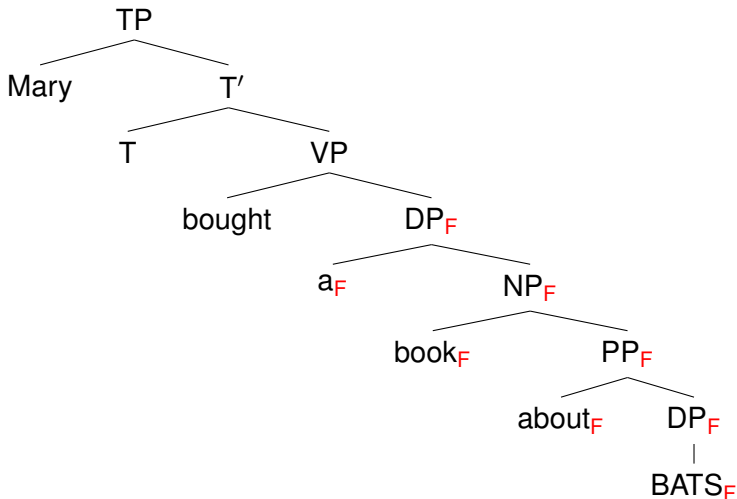
Selkirk, Lisa (1995). Sentence Prosody: Intonation, Stress, and Phrasing. In: J. Goldsmith (ed.) Handbook of Phonological Theory. Oxford: Blackwell. 550–569.

Intonation languages: Narrow vs. broad focus

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A: Mary bought a book about [BATS]_{Foc}.
- (46) Q: What did Mary buy?
A: Mary bought [a book about BATS]_{Foc}.
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Intonation languages: Focus projection

- ▶ tree structure for object focus with F-features

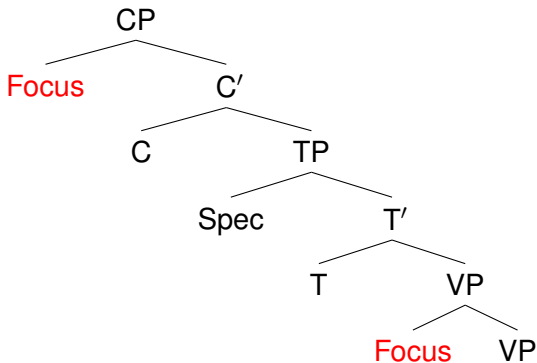


Tone languages

Starting hypothesis:

- ▶ Tone languages cannot make use of intonation for marking focus to the same extent as intonational languages, since the modulation of the tone could lead to a different lexical or grammatical meaning.
- ▶ As a consequence, tone languages use especially syntactic and/or morphological strategies to mark focus.

Tone languages: Syntactic focus marking



Tone languages: High focus - non subjects

- ▶ In many languages, focused constituents move to the left sentence periphery.
- ▶ The following examples show this for Dagbani (48) and (Nandom) Dagaare (49), both Mabia languages.
- ▶ In Dagbani, the fronted non-subject focus is accompanied by the focus marker *ka*.

- (48) Q: *Bo ka Adam kɔrigi-ra?*
what FOC Adam slaughter-IPFV
'What is Adam slaughtering?'
- A: *Noo ka Adam kɔrigi-ra.*
fowl FOC Adam slaughter-IPFV
'Adam is slaughtering a fowl.'

Tone languages: High focus - non subjects

- ▶ In Nandom Dagaare the focus marker is *no* (*la* in other dialects of Dagaare)

(49) Q: *Boo-no Adam ηmaare?*
what-FOC Adam build.PFV
'What did Adam build?'

A: *Yir no Adam ηmaare?*
house FOC Adam build.PFV
'Adam built a house.'

- ▶ Do you have the same pattern in your languages?

Tone languages: High focus - non subjects

Tone languages: High focus - subjects

- ▶ Focused subjects are also marked by focus markers.
- ▶ Dagbani uses a different marker for subjects, namely *n*:

(50) Q: *ɲuni n kɔrigi noo?*

who FOC slaughter.PFV fowl

'Who slaughtered fowl?'

A: *Adam n kɔrigi noo.*

Adam FOC slaughter.PFV fowl

'Adam slaughtered fowl.'

Tone languages: High focus - subjects

- ▶ Nandom Dagaare uses the same focus marker for focused subjects and non-subjects.

(51) Q: *Aa no ko a noɔ?*
who FOC slaughter DEF fowl
'Who slaughtered the fowl?'

A: *Adam no ko a noɔ.*
Adam FOC slaughter DEF fowl
'Adam slaughtered the fowl?'

- ▶ Do you have the same pattern in your languages?

Tone languages: High focus - subjects

Tone languages: Low focus

- ▶ Focus also be realized in its default *in situ* position.
- ▶ In situ focus in Dagbani and Dagaare is marked by *in situ* focus marker.
- ▶ In Dagbani, the *in situ* focus marker for non-subjects is *la*, which occurs with *in situ* non-subjects and wh-pronouns.
- ▶ Dagbani does not have an alternative strategy to mark *in situ* subject focus.

- (52) Q: *Adam kɔrigi-ri la bo?*
 Adam slaughter-IPFV FOC what
 'What is Adam slaughtering?'
- A1: *Adam kɔrigi-ri la noo.*
 Adam slaughter-IPFV FOC fowl
 'Adam is slaughtering a fowl.'

Tone languages: Low focus

- ▶ Nandom Dagaare also has *in situ* focus marking.
- ▶ The *in situ* focus marker is *ne* (sometimes reduced to *n*):

- (53) Q: *Boono Adam ko-rε?*
 what Adam slaughter-IPVF
 'What is Adam slaughtering?'
- A: *Adam ko-rε ne a noo.*
 Adam slaughter-PFV FOC DEF fowl
 'Adam is slaughtering a fowl.'
- (54) Q1: *Boono Adam ηmaa?*
 what Adam build.PFV
 'What did Adam build?'
- A1: *Adam ηmaa ne yir.*
 Adam build.PFV FOC house
 'Adam built a house.'

- ▶ Do you have the same pattern in your languages?

Tone languages: Low focus

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Focus syntax

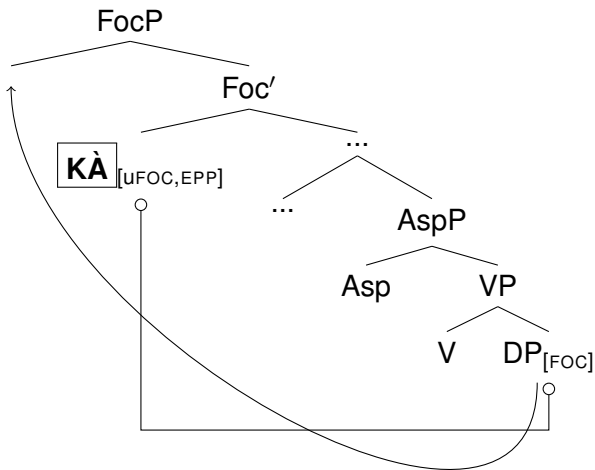
Implementation of the observations under Minimalist assumptions:

- ▶ The focus markers head focus projections (FocPs) in the peripheries of the clause and the VP.
- ▶ The focus heads carry syntactic features.
- ▶ The high focus head carries two features:
 - (i) an unvalued, interpretable focus feature **uFOC**
 - (ii) a **EPP** feature
- ▶ The uFOC feature is valued by the focused constituent.
- ▶ The EPP feature triggers movement to the specifier of the FocP.
- ▶ The low focus head only has an uFOC feature is valued by the in situ focused constituent.

Focus syntax - Dagbani

Assumptions for ex-situ focus of non-subjects:

(55)



Focus syntax - Dagbani

Assumptions for in-situ focus:

(56)

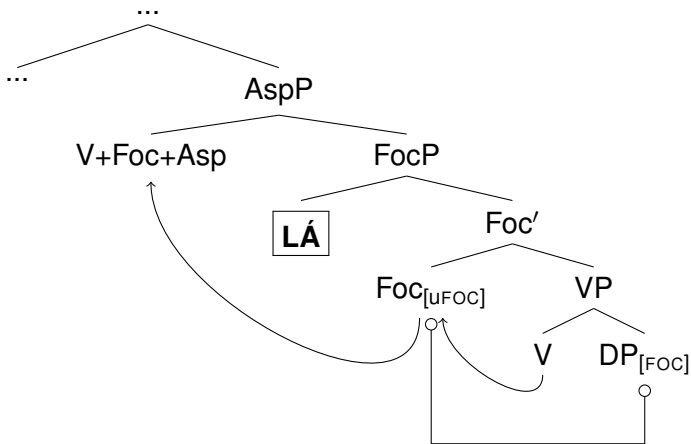


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Summary

- ▶ Information structure
 - ▶ Information structure is a theory on content and management of the common ground.
 - ▶ Central categories of IS are focus and topic.
 - ▶ Focus (and contrastive topics) introduces alternatives.
 - ▶ In most cases, focus has a pragmatic effect, it impacts CG management.
 - ▶ There are various different ‘types’ of focus with different contributions.

Summary

- ▶ Cross-linguistic differences
 - ▶ Broadly speaking, languages fall into two classes wrt. information structure, intonation, and tone languages.
 - ▶ Intonation languages mark focus by pitch accents.
 - ▶ There is a syntactically determined relation between the position of the accent and the size of the focus.
 - ▶ In tone languages, focus is often marked by syntactic movement.
 - ▶ Focus can also be realized in its default position.
 - ▶ In both cases, focus marking particles may mark the focus.
- ▶ Focus syntax
 - ▶ Syntactically, focus projects to Focus Phrases, which (may) contain overt focus markers.
 - ▶ FocPs may appear in the left peripheries of the CP and the vP.
 - ▶ The Foc head contains an unvalued focus feature which agrees with the focus constituent for valuation.