From conflict through compromise to collaboration: semantic structure, syntactic structure and information structure in natural languages…

…revisited

General claim I

Many language phenomena, in particular some marginal ones, but also central ones, can be explained through interaction of semantics, syntax and information structure

Cf. Zygmunt Frajzyngier, Erin Shay, *Explaining Language Structure through Systems Interaction*

General claim I

In order to support this claim we need to decide what is the semantics, what is the syntax, and what is the information structure, at least within our model.

General claim II

„Langue" and „parole"

Semantics, syntax and information structure within an utterance

Semantics , syntax and information structure within a language

General claim II

In utterances

Semantics -- semantic representation

Syntax – syntactic representation / description

Information structure -- „actual partition of a sentence"

In a language

Semantics – semantic structure of a given language

Syntax – syntactic possibilities and constraints (syntactic structure of this language)

Information structure – what can be „partitioned off" and how

General claim II

Why is the distinction important?

What is the semantic structure of a language if semantics is universal

Why and how do we posit different syntactic structures for languages if syntax is claimed to be universal

How do we posit information structure within a given language

General claim III

Nobody challenges the existence of semantics, syntax and information structure.

However, they are defined and described differently within different models of language

➔ Choosing our model

Rough outline of the model

- The model of language I propose is a kind of functional model of language. The way it is designed it is supposed to mirror the activity of the speaker. It is therefore an encoding model of text production.

- The model resembles MTM in that it takes as a starting point the sense the speaker is trying to convey, and as the result – the text produced. However, while MTM model is reversible in terms that it can mirror both the encoding procedure and the decoding one, here only the encoding mode is taken into account.

Rough outline of the model

- The main reason for that is that in real life the speaker bears the responsibility for his or her message. The speaker has all the encoding, i.e. linguistic means to hand.

Rough outline of the model

The speaker's choice constitutes the semantic contents of the message.

Before the encoding starts, the speaker has to organize the contents in view of subsequent encoding. There are several decision s/he makes, concerning

- the degree of explicitness
- relations between chunks of sense
- relative prominence of particular chunks
- relation to previous discourse
- the information structure

Rough outline of the model

The degree of explicitness covers the whole range of choices including encoding some chunk of sense by lexical or by grammatical means, if both are available.

For example, in some languages the speaker may choose a temporal conjunction that explicitly marks temporal relations, for example anteriority,. e.g. Polish *jak tylko* 'as soon as' or a general temporal conjunction, e.g. Polish *kiedy* 'when'.

Rough outline of the model

Consequently their final text may read:

Jak tylko usłyszał tę historię, pomyślał że...

 'as soon as he heard the story, he thought that...'

Or:

Kiedy usłyszał tę historię, pomyślał, że...

'when he heard the story, he thought that...'

where the anteriority is marked by perfective
    aspects of both verbs.

Rough outline of the model

Other examples: gerunds vs. finite clauses:

Śmiał się, rzeźbiąc twarz.

'lit. He was laughing, sculpting the face'

Śmiał się, kiedy rzeźbił twarz.

'He was laughing while sculpting the face

Rough outline of the model

Codziennie je oglądał, nie mogąc się nacieszyć ich kształtem, ich ładnością.

'He watched them every day, unable to get over the joy their shape and beauty were giving him'

Codziennie je oglądał, bo nie mógł nacieszyć ich kształtem, ich ładnością

'He watched them every day, because he was unable to get over the joy their shape and beauty were giving him'

Rough outline of the model

Nie będąc zdolny do naśladowania, byłem przecież zdolny do miłości.

'Unable to emulate, I was however able to love'

Mimo że nie byłem zdolny do naśladowania, byłem przecież zdolny do miłości.

'Although I was unable to emulate, I was however able to love'

Przyjmując taki urząd, postąpiłby wbrew woli i rozkazowi Rzplitej.

'Accepting the post he would have acted/he would act against the will and the order of the Commonwealth'

Gdyby przyjął taki urząd, postąpiłby wbrew woli i rozkazowi Rzplitej

If he accepted/had accepted the post he would act/have acted against the will and the order of the Commonwealth'

Rough outline of the model

In some cases the speaker may opt for nominalizing the relevant chunk instead of phrasing it as a gerund or clause,

Po usłyszeniu tej historii, pomyślałem…

'Upon hearing the story, I thought…'

Relations between chunks of sense may be framed alternatively, for example the speaker may opt for a compound sentence bearing a concessive clause or a coordinated sentence, with adversative clause, e.g.

Nie byłem zdolny do naśladowania, ale byłem przecież zdolny do miłości.

'I wasn't able to emulate, but I was however, able to love.

These choices are similar to what within the MTM is called conceptualization

Rough outline of the model

Differences in relative prominence of sense chunks is similar to narrative foregrounding/backgrounding techniques, and includes encoding some parts of the message as parenthetical, e.g.as a nonrestrictive relative clause or other parenthetical structures.

Cf. Lea Sawicki, *Toward a narrative grammar of Polish)*

Rough outline of the model

Nevertheless main decisions of this kind affect the choice of lexical items among synonymous expressions existing within language, cf.

Ocalałem vs. *Uratowałem się* vs. *Zostałem uratowany.*

(the example is drawn on different Polish version of Frodo's narrative in *The Lord of Rings*, the original sentence reads *I was saved.*

Lexical items are chosen for their sense but also for their semantic and syntactic valency, as they play important part of how the final encoded version will read. In our example it is illustrated by choosing either an intransitive verb or a transitive verb constructed as reflexive or passive

Rough outline of the model

Here is where syntax intervenes

In our model, as in MTM, syntax is two-level: deep syntax and surface syntax.

However

Our claim is that for our purposes deep syntax is best represented as dependency syntax, while the surface syntax is best represented by syntax of immediate constituents.

Rough outline of the model

It is generally known that dependency trees and immediate constituents trees are equivalent in the sense that every syntactically structure that can be adequately described by one, can be described by the other.

Rough outline of the model

However, for our purposes it is important to note that while in the DS some elements are co-dependent on their head and fairly independent between themselves, in CS, by the virtue of being constituents of a larger structure, their relation is more obviously marked.

Rough outline of the model

This is particularly important for our purposes, since we would like to account, among other things, for the interaction between surface syntax, including linear order, and the information structure:

Rough outline of the model

Jan pojechał do Krakowa

Do Krakowa pojechał Jan (+)

Do Krakowa Jan pojechał (++)

Jan pojechał do Krakowa na koniu

Do Krakowa pojechał Jan na koniu (++)

Do Krakowa Jan pojechał na koniu (+)

Rough outline of the model

It is generally known that in so-called „free order languages" the linear order can be used for marking the information structure (that is what the „actual partition" was all about)

However, not all non-canonical orders are equally unmarked.

Rough outline of the model

Do Krakowa pojechał Jan (+)

'to Krakow went John'
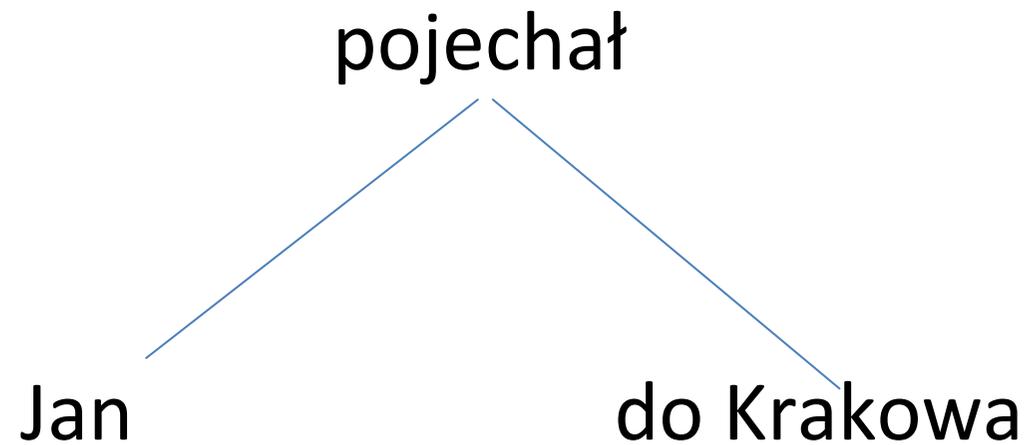
Do Krakowa Jan pojechał (++)

'to Krakow John went'

+ *na koniu* 'on horseback'

Do Krakowa pojechał Jan na koniu (++)

 Do Krakowa Jan pojechał na koniu (+)

Rough outline of the model

pojechał

Jan   do Krakowa

Rough outline of the model

To account for the difference in markedness between

Do Krakowa pojechał Jan (+)

Do Krakowa Jan pojechał (++)

 you need some special rule, which is apparently contradictiory to the special rule that would account for:
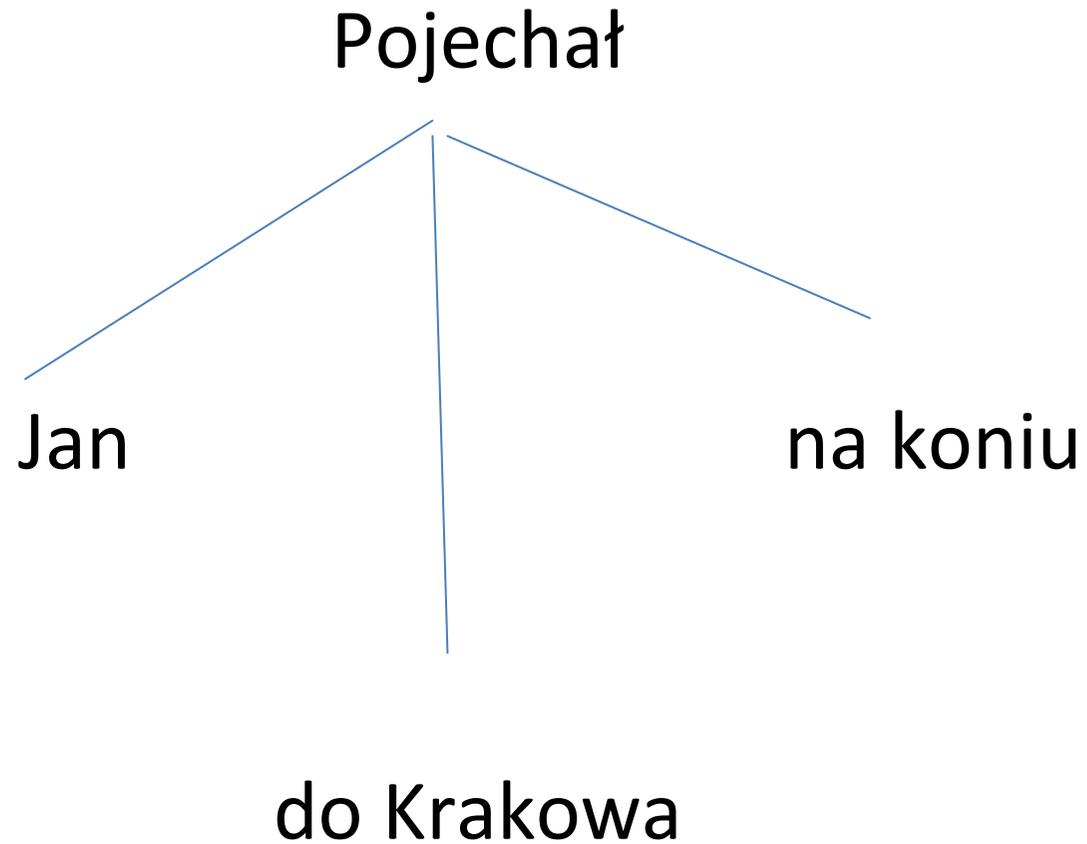
Do Krakowa pojechał Jan na koniu (++)
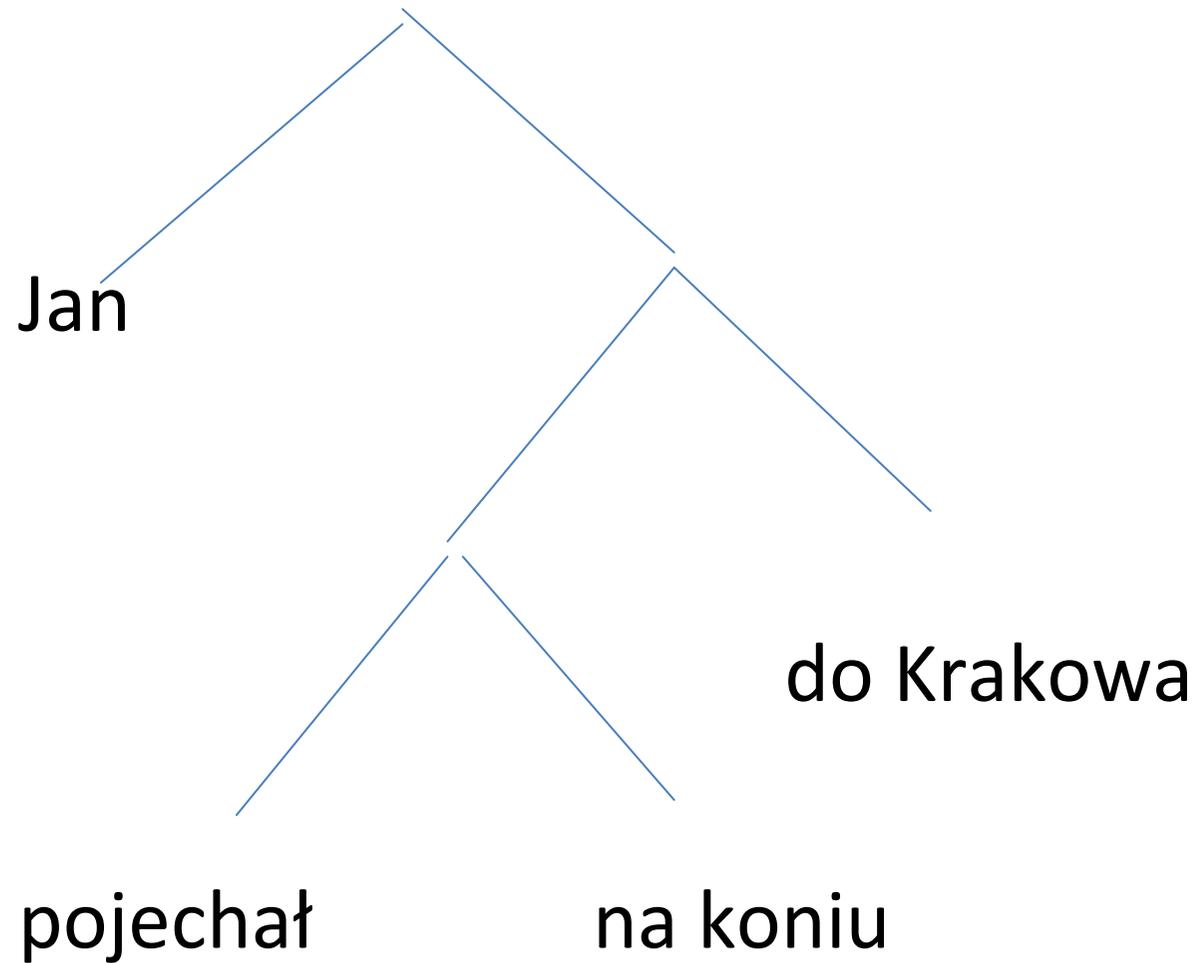
 Do Krakowa Jan pojechał na koniu (+)

Rough outline of the model

Jan

pojechał   do Krakowa

Rough outline of the model

Pojechał

Jan

do Krakowa

na koniu

Rough outline of the model

Jan

pojechał   na koniu

do Krakowa
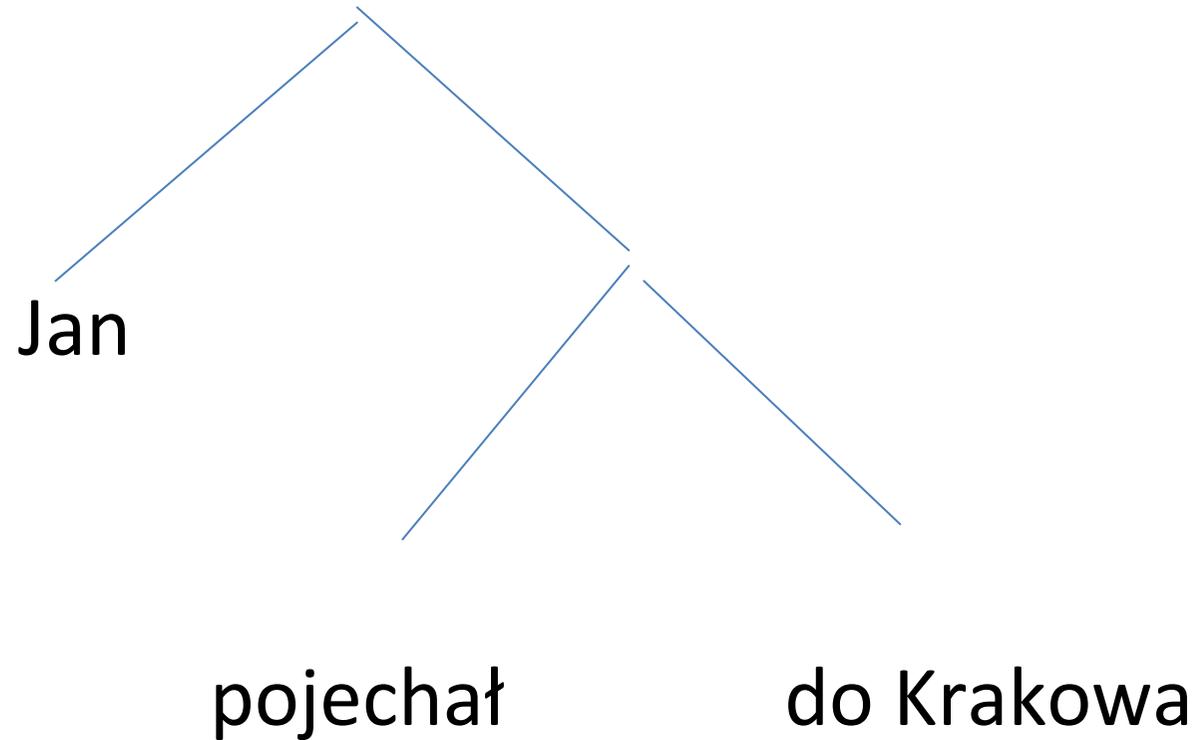
Rough outline of the model

To account for the fact that in some languages, e.g. Polish coordinate groups cannot have a shared adjective as their dependent, while they can share a prepositional phrase:

En. *old men and women;*

men and women in furs

Sp. *Mujeres y hombres viejos;*

mujeres y hombres en pieles

Rough outline of the model

Pl*. starzy mężczyźni i kobiety*

starzy mężczyźni i stare kobiety;

mężczyźni i kobiety w futrach

To complicate our life:

starzy: mężczyźni i kobiety

Rough outline of the model

Piję gorzką kawę i herbatę

= Piję gorzką kawę i [gorzką] herbatę

Piję kawę i herbatę gorzkie.

Pije gorzkie: kawę i herbatę.

Piję kawę i herbatę bez cukru

Rough outline of the model

Since I believe that the deep syntactic representation of a sentence reflects its semantic representation (more about it later) and these utterances „make sense" but they are awkward at the level of surface syntax, something tricky is going on

Rough outline of the model

Constraint:

Coordinate groups are not immediate consitutents for structures with adjectives

Adjectives are not immediate constitutents for coordinate structures.

But on some deeper level, these sentences are fine

Rough outline of the model

They are fine, because, since they cannot be formed according to syntax -- they are formed on „information structure" instead.

Non-sententials:

Dziś wydatki, jutro zyski.

'today expenses, tomorrow gains'

Wydatki jutro, zyski dziś.

Rough outline of the model

Odległe gwiazdy i mgławice, góry niebosiężne i oceany, człowiek i bakterie — wszystko zbudowane jest z atomów.

'Far away stars and nebulae, heaven-high mountains and oceans, man and bacteria – everything is made of atoms'

What is the information structure

History: The Prague School

- Vilem Mathesius:
  - Actual partition of a sentence: starting point vs. nucleus; datum vs. novum

- Francisek Danes
  - Syntactic, Semantic and Functional Perspective:

  S   V   O

  Ag   A   P

  Topic Comment

What is the information structure

- contextually given information vs information not retrievable from context (also context dependent/independent)

- common (shared) knowledge vs transmitted knowledge

- old information vs. new information

- what the sentence is about vs. what is being said

- what is presupposed vs what is posed

- what the audience doesn't vs what it does focus on

What is the information structure

Contemporary approaches:

Generativist

Functional

(cf. N. Erteschik-Shir, *Information structure: the syntax-discourse interface*, Oxford University Press, Oxford.)

„Pervading"

What is the information structure

Topic – comment and presuppostion -- focus

Topic -- comment/theme -- rheme

Generativist approach

Uses information structure to account for syntactic phenomena, usually movement of elements that results in non-canonical orders, including scrambling

What is the information structure

- Slots into which elements move

- Elements marked as topics/foci at numeration

 How to establish whether the elements in question are topics or foci

- syntactic phenomena

- „functional" phenomena.

What is the information structure

A very good example: Rizzi 1995 and „left periphery"

Romance languages use pleonastic clitical pronouns whenever objects are moved from their canonical position, however, Italian and Spanish distinguish between an object fronted as topic and objects fronted as focus,

What is the information structure

A Pedro le vi en la calle (y a Juan ....)

'Peter [topic] him I saw in the street'

A Pedro vi en la calle y no a Juan

'Peter[focus] I saw in the street and not John]

What is the information structure

Functional approaches -- groundbreaking work

what happens with the contents of a message

discourse phenomena involved/principal

different types of topics/foci

-- continued

-- topic shift

-- split topics

-- secondary topics

What is the information structure

Non syntactic or not only syntactic phenomena:

   intonation

   anaphora

Discourse, context,

What is the information structure

In most generative accounts the information structure is invoked only when necessary to account for some phenomena

Exceptions include Fanselow and Aboh

In functional accounts the information structure is fairly independent from other features.

What is the information structure

„Pervading" approach:

The information structure is basic to the way language works and is described.

Boguslawski and his school (not mentioned in Erteschik-Shir)

Information structure (theme and rheme) are part of the very semantics of each language unit

What is the information structure

Several degrees of thematic-rhematic division

Different units of language postulated on the
     basis of different thematic-rhematic structure

The notion of topic can be used in syntax:

Holvoet

And I will be doing something similar

Main controversies

How to define theme-rheme

How to establish what is theme and what is
   rheme

   complicated by contrastive structures

What expressions can serve as topics (can there
   be non-nominal/verbal topics

Could there be topic-less sentences

The reason for controversy

Not separating speaker's perspective from the hearer's perspective

Comparing theoretical proposals made within different perspectives.

The reason for controversy

„. It seems that they are geared by a very fundamental difference in perspective adopted by each linguist for their analyses. Classical approaches, [...] have followed, implicitly or explicitly, the speaker's perspective. [...] Other approaches seem to follow the audience's perspective. The advantage of this perspective is that the audience's perspective normally mirrors the way a linguist looks at the linguistic data."

The reason for controversy

„The two perspectives and the resulting statements about the information structure of the utterance are quite distinct because in a deictic situation each participant has his own task to accomplish. The audience's task is to decode and interpret the message. It is, therefore, natural for them to think in terms of 'what the message is about'.

The reason for controversy

The way this question is answered influences the way the audience construes the theme of the utterance. And the very form of the question favours nominals as themes. By contrast, the speaker assumes a different role: s/he remains in charge of the communication process and does his best, using all the linguistic means available, to signal to the audience how the message should be processed.

My proposal

The audience perspective, explicitely embodied in Bogusławski's proposal has an important advantage over others:

In semantic analyses what he considers thematic dictum or theme correspond to what is presupposed, while rheme corresponds to what is posed.

My proposal

The evidence for Bogusławski's proposal

Negation test – works both for rheme and for what is posed

Once multi-leveled T-R structure is assumed, if you thematise a lexical item, its posed contents no longer behaves as posed/rhematic

My proposal

To be from speaker's perspective

To account for similiarities between theme rheme and presupposed – posed distinction

To be multilevel

To have explicit themes

To have both theme and rheme positively defined

My proposal

Starting point: the card catalogue approach.

The theme of a sentence is hereby defined as a syntactic constituent [...] indicated by the speaker as the entry under which the audience is supposed to file the information provided by this sentence" (Huszcza 1983)

My proposal

Some conundrums:

What is „information provided by this sentence"

Is there a rheme somewhere?

To solve them

My proposal

The „Relevance Theory" (Sperber and Wilson 1986)

Important notions:

    shared cognitive environment

    manifest facts (within this environment)

    assumptions about shared cognitive environment

    utterance – change in shared the cognitive environment (change in the cognitive environment of the audience

My proposal

The speaker's behavior (=utterance) is meant (by the speaker) to make a fact manifest to the audience.

Thus it alters the cognitive environment of the audience

Two types of changes:

      quantitative

      qualitative

My proposal

A qualitative change involves making a new fact manifest

(an addition to the cognitive environment of the audience)

A quantitative change involves re-arranging the cognitive environment of the audience by bringing some „known" fact more to the fore)

My proposal

Thematic element of the utterance:

one that is meant by the speaker to produce a qualitative (i.e. non-quantitative change) in the shared environment

Rhematic element of the utterance:

one that is meant by the speaker to produce a quantitative change in the shared environment (making a new fact manifest)

My proposal

This is somehow similar to the distinction

 datum – novum

Old information – new information etc.

But:

With a twist:

My proposal

Speaker can only assume what constitutes the shared environement and may err:

What they have meant to produce a quantitative change, produces the qualitative change because the assumption about the fact being previously manifest is wrong.

(Themes previously unknown, unmentioned, etc.)

My proposal

What they have meant to produce a qualititative change, produces a quantitative change because the assumption about the fact not being previously manifest is wrong.

(Rhemes corresponding to known facts)

My proposal

Examples:

Unknown themes:

„*He was a very sick white man*" (J. London,
   Adventure, Ch. 1; Stalmaszczyk)

Known rhemes:

   Columbus discovered America in 1492

   (elementary school vs. linguistics class)

My proposal

When commenting about „aboutness" as criteria for theme, I have written (2008):

„The speaker is trying to do something with the message he is conveying, but his responsibility ends the moment he closes his mouth. […] The audience arranges the information any way it wishes, even treating the contents of the message in a way that was not planned by the speaker. In fact, it may act in the way described in *Foucault's Pendulum,* when one of the protagonists decides to become "a kind of private eye of learning"

„Still, I was accumulating expeience and information, and I never threw anything away. I kept files on every-thing. I didn't think to use a computer [...]. Instead, I had cross-referenced index cards. Nebulae, Laplace; Laplace, Kant; Kant, Königsberg, the seven bridges of Königsberg, theorems of topology... It was a little like that game where you have to go from sausage to Plato in five steps, by association of ideas. Let's see: sausage, pig's bristle, paintbrush, Mannerism, Idea, Plato. Easy. Even the sloppiest manuscript would bring twenty new cards for my hoard."

My proposal

Theme and rheme vs. what is presupposed and what is posed.

What is presupposed changes the cognitive environment of the audience in a quantititative way, the way a theme does.

What is posed changes the cognitive environment of the audience in a qualititative way, the way a rheme does.

My proposal

The difference: with themes and rhemes the
  speaker has the choice

What is presupposed/what is posed depends
  on

  semantics of a given lexical unit, cf.

  accuse : blame

  pretend

  regret

  know

My proposal

And also syntax, cf. non-defining relative clauses, and other parenthetic structures:

They are rhematic by nature

They fall under factitive presuppostion

The solution: their truth-value is presupposed, their contents is not.

My proposal

Themes and rhemes are part of the utterance's semantic representation

Not to be confounded with the semantic structure

(to be discussed later on)

My proposal

1. Information structure is binary, i.e. utterances are divided theme and rheme . The distinction is not between an element marked for some purpose and the unmarked remainder but between the two counterbalanced, equally important parts of the utterance and the information it contains. The scope of the theme and the rheme of an utterance are marked by a TR boundary

My proposal

2. Themes and rhemes can be further divided into secondary themes and rhemes , by virtue of a secondary TR boundary. This division can be even more granulated; however, there might be pragmatic limitation of how far one can go.

My proposal

3. Lower order themes and rhemes may be so marked for many reasons, including contrast. Nevertheless, assigning theme and rheme values to sentence parts has to conform to constituency relations. If two utterance elements do not form a constituent, they cannot constitute a single topic or a single focus. For example internal and external arguments of a verb do not form a single theme.

My proposal

Jan Pawła uderzył

'John (S, N.) Paweł (DO, Acc) hit'

This conundrum is solved by marking one of them as an upper order theme or rheme and the other as a lower order theme/rheme, not necessarily contrastive.

[Jan]$_{T0}$[[Pawła]$_{T1}$ [uderzył $_{R1}$]] $_{R0}$

My proposal

4. Speakers may refrain from dividing their utterances into theme and rheme and the resulting utterances are considered thetic They may also decide not to mark the division explicitly, if the division is otherwise retrievable or if such marking interferes with whatever effect, be it stylistic, semantic, pragmatic or other, they want to achieve.

My proposal

5. Some languages have special resources, morphological or syntactical, to mark themes rhemes, or the division itself:

- thematic particles in Japanese and Korean,

=>Subject–driven languages vs. Topic driven languages

- focalizing particles in Chadic (Pawlak 1994) and in Gungbe (Aboh 2007),

=> Focus-driven languages

My proposal

Marking the division:

- prosody: - pause
- cleft and pseudocleft sentences
- particles, e.g. PL. *to,* PR *é*

  Jan to ma szczęście

  O João é tem sorte

My proposal

Obviating the division:

EN   *There is a policeman in the kitchen*

FR   *C'est que j'ai parlé à Pierre*

'But I did speak to Pierre' (Tollis 2006)

Il ya un téléphone qui sonne

'There is a telephone ringing', (Holvoet, pc).

My proposal

SP   *Hay agua hirviendo*

'The water is boiling,

lit. There is water boiling'.

RU   *Kefira v magizine ne było*

'There was no kefir in the shop'

Otvet iz polka ne prišel

Otveta iz polka ne prišlo

'The answer from the regiment didn't come'

My proposal

PL

Jana nie było w domu

'John wasn't home'

Jan nie był w domu

'John didn't pass through his home'

Woda nakapała na parapet

'The water dripped on the window sill'

Nakapało wody na parapet

'There is some water on the window sill'

•

My proposal

6. Some languages allow for marking TR division through changes in word order.

spoken language – intonation pattern

written language word-order changes alone stand for the division and the reader is left to reconstruct the possible pattern.

My proposal

Word-order changes alone (without intonation) rarely serve to distinguish themes and rhemes By contrast, they tend to mark the TR boundary itself.

They may also serve to obviate the division

(special intonation or „lack of it")

PL   *Jan dał Dorocie książkę.*

My proposal

Jan dał książkę Dorocie

'John gave the book to Dorota'

Jan dał Dorocie książkę

John gave Dorota the book

My proposal

7. Languages vary as to the degree to which they accept TR divisions playing havoc with the linear structure of constituents.

=>   Constituency-driven languages vs. T-R boundary driven languages

Polish appears to be fairly strongly TF-boundary driven, which may account for the fact that it allows for deep left branch extraction :

My proposal

Jaką Zadie Smith książkę czytasz?

'lit. What of Zadie Smith book are you reading?'

Jaką czytasz książkę Zadie Smith?

Lit. What are you reading book by Zadie Smith?'

Lwa czytam Tołstoja, nie Alekseja

'I am reading a book by LEW Tolstoj, not by Alexy Tolstoj '

My proposal

Moreover, this is not limited to nominal structures, cf.

Jak to było wczesnie?

'How it was early?

And permits coordinating and stringing interrogatives:

Kto i kogo zabił?

'lit. Who and whom killed'

Kto kogo zabił?

'lit. Who killed whom?

The semantic structure of a language

Roughly:

its lexical structure, i.e. the way chunks of sense are represented by words

cf. Mel'cuk's semantemes

„phrasemes" or constructions

The semantic structure of a language

Examples come from contrast between languages

En. *assassinate* (Mel'cuk's example)

En. *throttle, smother, strangle*

Pl. ocaleć

Pl. liczyć na coś/na kogoś; liczyć się z kimś/z czymś

The semantic structure of a language

Ru. *iz za* (Mel'cuk's example)

En. *yet alone* (Fillmore)

The semantic structure of a language comprises semantic valencies of words.

From semantics to deep syntax

Semantic valencies => syntactic dependencies

Semantic roles => arguments/participants

In the „sense⇔text" model the arguments are simply numbered

From semantics to deep syntax

Argument nr 1 -> surface subject unless something, e.g. passivisation, happens.

Argument nr 2 -> surface object, etc…

Not good enough for us:

circular: subject – argument 1

argument 1 – subject

From semantics to deep syntax

Holvoet's proposal (adapted)

Holvoet:

Subject – 1st order theme

Direct object -- 2nd order themes etc.

Unusable here because we would like to have non-nominal themes somewhere along the line

From semantics to deep syntax

Likelihood of becoming a theme

Unlikelihood of becomeing a rheme

Similar to topic-worthiness

but:

Being likely to become a theme doesn't mean it actually will

From semantics to deep syntax

However, if it does not become a theme – the structure is marked

Degree of markedness – intuitive

Translates into the complexity of processing necessary to achieve such structure

e.g. passives are more marked than actives, because you need a passivization procedure

From semantics to deep syntax

1st argument = „deep subject"

  most likely to become the theme,

  least likely to become a rheme;

  most likely to be separated from the rest by the TR boundary

2nd argument = „deep DO"

  second most likely to become the theme,

  second least likely to become a rheme;

From semantics to deep syntax

3rd argument = „deep IO"

    third most likely to become the theme,

    third least likely to become a rheme;

Etc.

From semantics to deep syntax

Why two pronged? (themacity and rhemacity)

Complements vs. Adjuncts problem

or core vs. non core elements (FrameNet)

While complements are ranged on a scale of likelihood of thematicity/unlikelyhood of rhemacity, adjuncts are as likely to appear as ones or as others

From semantics to deep syntax

Why TR boundary invoked for 1st argument only?

    To account for special status of the subject in surface syntax

(when going from dependency syntax to consituents syntax)

From semantics to deep syntax

Problems

1) Verbs that are usually used in passives

2) Polish structures of the kind

Jana boli głowa

'lit. To John aches head'

Special markings in the semantic structure of the language?

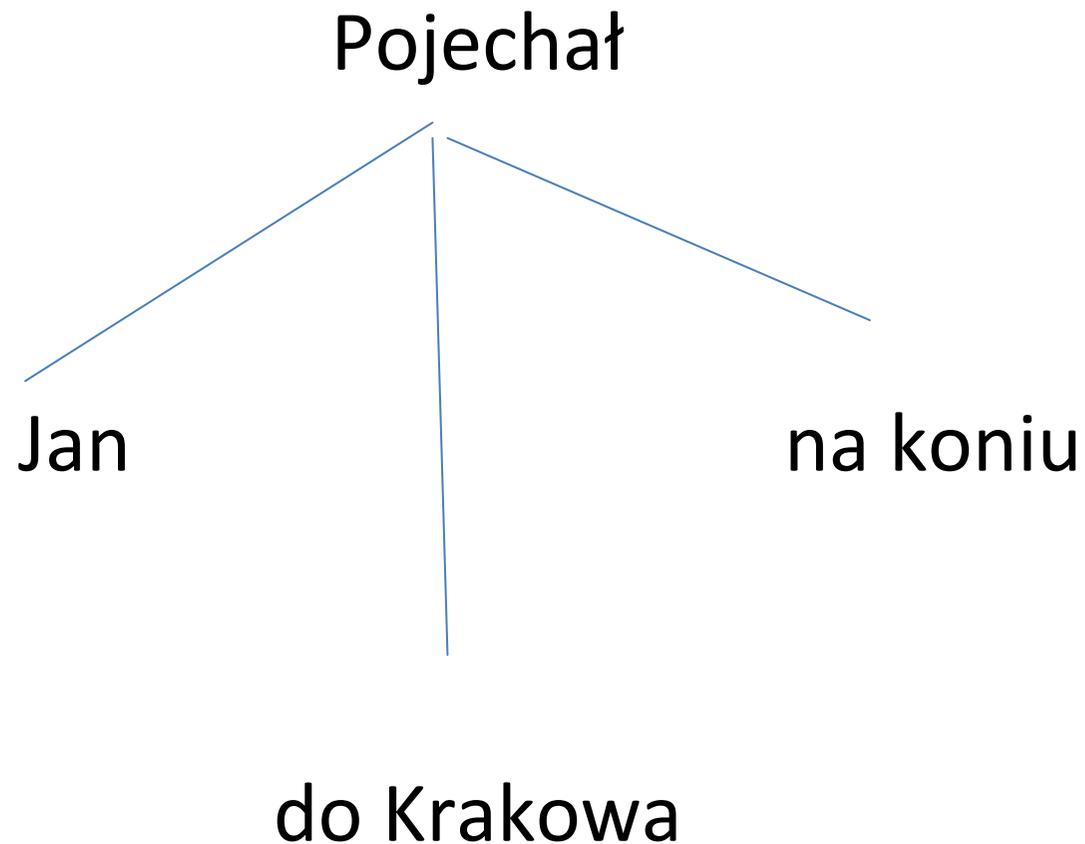More complement-like elements (semantically required ones tend to stay in place)

From semantics to deep syntax

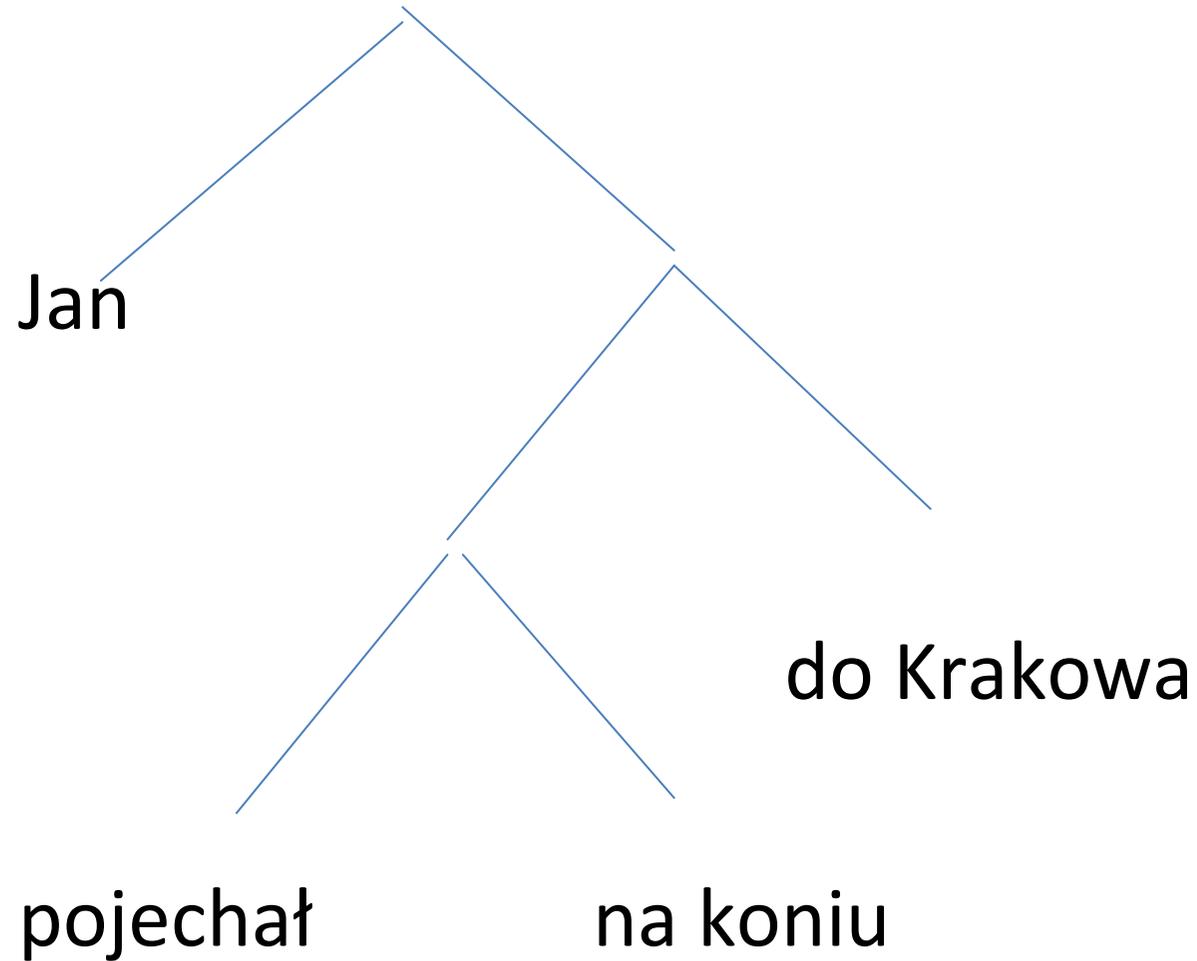Combining chunks of sense into dependency structures:

Possessives vs. Indirect objects

Cf. Polish *Połamią mu nogi* vs. *They will break his legs // They will break his legs for him*

From deep syntax (dependency)

To surface syntax (immediate constituents

Jan

pojechał   na koniu

do Krakowa

From deep to surface syntax

Translating dependencies into constituencies

[[Verb + 2nd argument] + 3rd argument]
… + unnumbered arguments

+ 1st argument
(as the last)