

A paradigm for testing contrastive topic projection

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Background on focus projection

Basic observations

Observation: when the **object** carries sentence stress in an English sentence, the **VP or IP** can be interpreted as focused:

(cf. Chomsky 1971, Jackendoff 1972, Höhle 1982)

- (1) Is your neighbor building a chair?
No, my neighbor is building [a DESK]_{focus}.
- (2) Is your neighbor sleeping?
No, my neighbor is [building a DESK]_{focus}.
- (3) Why couldn't you sleep?
Was it because of the weather?
No, [my neighbor is building a DESK]_{focus}.

Basic observations

Observation: when the **object** carries sentence stress in an English sentence, the **VP or IP** can be interpreted as focused:
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Question: Is there also **contrastive topic** projection, and how to test this empirically?

Theoretical implementation

One way to **model focus projection**: neutral and marked prominence relations.

$$\begin{array}{r}
 (\quad \quad \quad)_t \\
 (\quad) \quad (\quad (\quad) \quad)_\phi \quad \textit{prosody} \\
 [S]_{NP} \quad [V \quad [O]_{NP} \quad]_{VP} \quad \textit{syntax}
 \end{array}$$

cf. Truckenbrodt (1995), Féry & Samek-Lodovici (2005)

Theoretical implementation

The **neutral** pattern can be represented by grid marks at different prosodic levels.

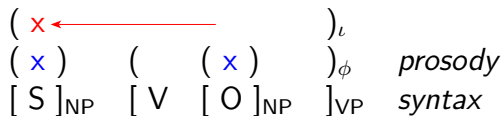
$$\begin{array}{r} \left(\begin{array}{c} \\ \\ \end{array} \right)_t \\ \left(\begin{array}{c} x \\ \\ \end{array} \right) \left(\begin{array}{c} \\ x \\ \end{array} \right) \left(\begin{array}{c} \\ \\ \end{array} \right)_\phi \quad \textit{prosody} \\ [S]_{NP} \quad [V \quad [O]_{NP} \quad]_{VP} \quad \textit{syntax} \end{array}$$

cf. Truckenbrodt (1995), Féry & Samek-Lodovici (2005)

Theoretical implementation

Focus can **change** the prosodic structure and/or the prominence relations at certain levels.

E.g., **subject focus** requires a change, because the subject is not prominent at the level of the intonation phrase by default.



cf. Truckenbrodt (1995), Féry & Samek-Lodovici (2005)

Theoretical implementation

VP focus does **not require** a change, because the VP is prominent at the level of the intonation phrase by default.

$$\begin{array}{l} \left(\begin{array}{c} \\ \\ \end{array} \right)_t \\ \left(\begin{array}{c} x \\ \\ \end{array} \right) \left(\begin{array}{c} \\ x \\ \end{array} \right)_\phi \quad \textit{prosody} \\ [S]_{NP} \quad [V \quad [O]_{NP}]_{VP} \quad \textit{syntax} \end{array}$$

cf. Truckenbrodt (1995), Féry & Samek-Lodovici (2005)

Theoretical implementation

- Under this view, **'focus projection'** to the VP/IP corresponds to cases in which the **default** prosodic pattern (determined by syntax) satisfies the focus requirement for these larger constituents.

For related approaches using metrical trees, see Williams (1997), Szendrői (2003), Wagner (2010), Büring (2015).

Background on contrastive topics

Contrastive topics: semantics

Focus marking indicates what question is currently addressed:

- (4) Mein Nachbar baut einen **TISCH**.
my neighbor builds a desk
'My neighbor is building a DESK.

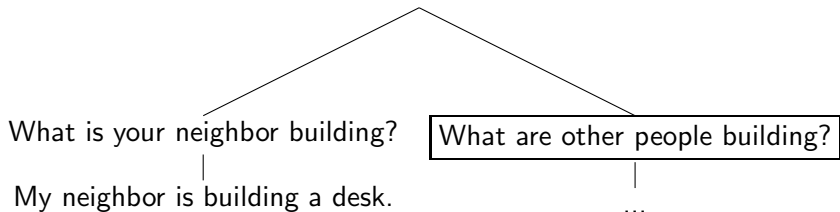
What is your neighbor building?

My neighbor is building a desk.

Contrastive topics: semantics

Contrastive topic (CT) marking (rising accent in German) indicates what further questions are relevant:

(5) Mein /NACHBAR baut einen TISCH...



Contrastive topics: phonology (German)

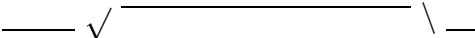
CT: (cf. Féry (1993), Jacobs (1997))

- rising pitch accent: L*H (or fall-rise, 'root contour')
- following material: compressed register (high)

Focus:

- falling nuclear pitch accent: H*L
- following material: compressed register (low)

CT + focus form a '**hat contour**' in German:

(6) 
 Mein NACHBAR baut einen TISCH

Contrastive topic projection

It has been proposed that focus and CT are similar wrt. prosodic prominence: (Féry 2007)

- Fronted CTs form their own intonation phrase.
- Parallel prosodic requirements:
 - STRESS-TOPIC: A topic phrase has the highest prosodic prominence in its topic domain.
 - STRESS-FOCUS: A focused phrase has the highest prosodic prominence in its focus domain.

Contrastive topics vs. foci

Different theoretical proposals:

- CTs are essentially (higher-order) foci.
(Wagner 2012, Constant 2014)
- CT and focus are distinct categories.
(Büiring 2003)

If they are the same category, we would expect **similar projection behavior**.

Contrastive topic projection

That CT projection from the object to the VP is possible has been sporadically noted in the literature:

- (7) Den /ROMAN habe ich GESTERN gelesen...
the novel have I yesterday read
'I read the novel yesterday...'

→ Current question: 'When did you read the novel?'

→ Also relevant: 'When did you read other things?' $CT = O$

or: 'When did you do other things?' $CT = VP$

(cf. Jacobs 1997:96, Büring 1997:72–74, Constant 2014:42/105–106)

Contrastive topic projection

Previous experiments (Wierzba 2013, Wierzba 2017):

- Acceptability ratings for auditory stimuli with contexts.
- Some evidence for CT projection, a.o. from the object to the VP.
- But: **not replicable**, often **overall high ratings**, **small contrasts**, large **variability** between and within speakers.

A new paradigm

Empirical challenges

Studying contrastive topic projection empirically is challenging.

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Proposed solution: A **theater scenario**.

- allows to explicitly contrast any pair of propositions without plausibility issues

Illustration of the paradigm

You saw a theater play with a friend, including the following scenes:

Scene 1: *(in a port)* A fisherman warns a sailor.

Scene 2: It storms.

Later, you talk about the play:

You say: "I remember that a fisherman warned a sailor and that it stormed. In which scenes did that happen?"

Your friend answers: "**Dass der Angler den Segler gewarnt hat**, haben wir in der ersten Szene gesehen.

(lit. That the fisherman warned the sailor, we saw in the first scene).
It stormed later."



.../ANGLER...Segler...



...Angler.../SEGLER...

neither

Empirical challenges

2. Previous examples and experiments usually involved **fronting**, because CTs have to precede the focus to form the hat contour. → confound: syntactic movement.

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Proposed solution: use **preposed embedded sentences with basic SOV** order

→ hat contour can be formed without fronting

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Proposed solution: **guide attention** to intonational cue, using a **forced-choice** method, explicit instructions and training based on uncontroversial cases (narrow contrast).

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Empirical challenges

A further advantage of the paradigm:

- Is also applicable to (contrastive) focus projection.
- Allows a direct comparison.

Illustration of the paradigm (focus)

You saw a theater play with a friend, including the following scenes:

Scene 1: *(in a port)* A fisherman warns a sailor.

Scene 2: It storms.

Later, you talk about the play:

You say: "I think that in the first scene we saw that it stormed."

Your friend answers: "Nein, da haben wir gesehen, **dass der Angler den Segler gewarnt hat.**

(lit. No, there we saw that the fisherman warned the sailor). It stormed later."



...ANGLER...Segler...



...Angler...SEGLER...

neither

Experiment

New experiment

Empirical scope of the experiment:

- Testing projection from **subject/object** to sentence level.
- clear perceptual distinction; different hypotheses

Hypotheses

If focus and CT are similar categories with **similar prosodic constraints**, we would only expect a difference in the **intonational** realization of the **nuclear accent**:

$/ \text{---} \backslash \text{---} / \text{---} \backslash \text{---}$	<i>intonation</i>	compatible with:
(x) _i		focus = object
((x)) _φ	<i>prosody</i>	focus = VP
[S] _{NP} [[O] _{NP} V] _{VP}	<i>syntax</i>	focus = sentence

$/ \text{---} \backslash \text{---} \checkmark \text{---}$	<i>intonation</i>	compatible with:
(x) _i		CT = object
((x)) _φ	<i>prosody</i>	CT = VP
[S] _{NP} [[O] _{NP} V] _{VP}	<i>syntax</i>	CT = sentence

Hypotheses

Alternative: the relevant cue for projection might be the **alignment of the hat contour** → left-aligned with CT? (Wierzba 2013, 2017)

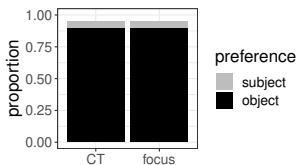
/ - \ — √ —————	<i>intonation</i>
(x) _ι	
(x) ((x)) _φ	<i>prosody</i>
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compatible with:
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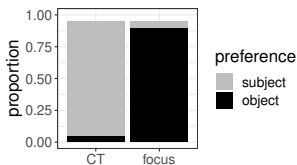
compatible with:
CT = subject
CT = sentence

Hypotheses



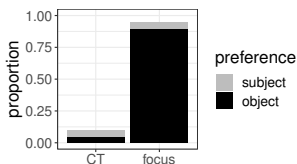
CT projection = focus projection

→ no differences



CT left-aligned with hat contour

→ main effect of IS category on
S/O preference



no CT projection, or different

→ main effect of IS category on
'neither' responses


Results: controls

13 out of 16 participants: **>80% expected answers** in narrow contrast controls, e.g.:

Scene 1: The old lioness is hunting

Scene 2: The young lioness is hunting.

 ...die /JUNGE Löwin...

 ...die junge /LÖWIN...

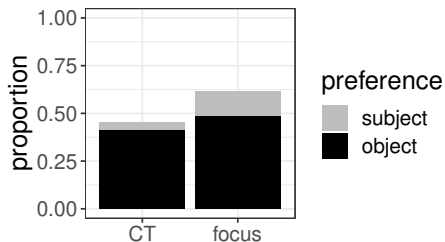
Scene 1: The car moved forward.

Scene 2: The car moved backward.

 .../VORWÄRTS gefahren...

 ...vorwärts /GEFAHREN...

Results: summary



- Significantly more “neither” answers for CTs.
- Significantly less projection from subject for CTs.

(20 items, 16 subjects; 3 subjects excluded based on > 20% unexpected responses in control items; 130 data points per condition)

Discussion

Mean results: CT and focus projection possible from O, sometimes focus projection possible from S.

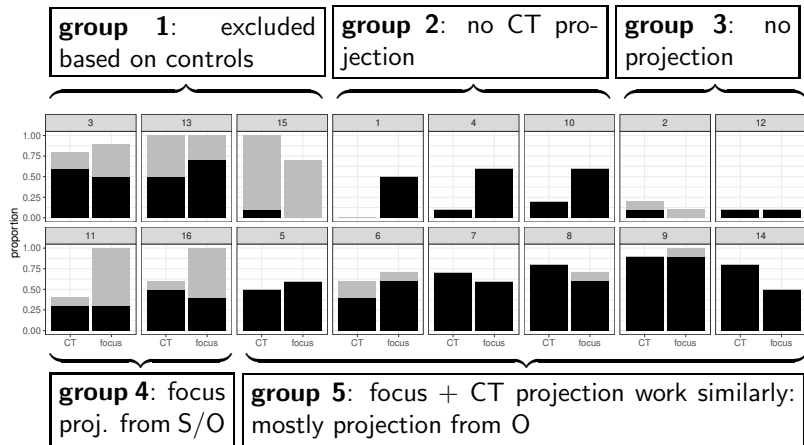
→ CT and focus projection work similarly, modulo noise?

By-subject analysis: little noise, systematic patterns – some participants did not accept CT projection at all.

→ CT projection impossible?

Fillers: Assumption about $O \rightarrow VP$ projection not confirmed; perhaps a methodological issue?

Results: by subject (grouped)



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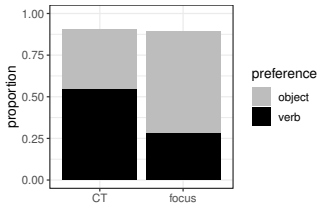
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Results: fillers

But other fillers on **projection to the VP** show an unexpected pattern: **cue on verb** preferred to a high degree.



Scene 1: The horseman greeted the passerby.

Scene 2: The horseman dismounted.

🔊 ...den /PASSANTEN begrüßt hat...

🔊 ...den Passanten /GEGRÜSST hat...

Discussion

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Fillers: Assumption about O→VP projection not confirmed; perhaps a methodological issue?

Open question

Open question:

- Unexpectedly high rate of projection from the verb rather than the argument in fillers: perhaps due to the fact that one/zero-place predicates were used to set up broad contrast?¹ (→ salient verb?)

Scene 1: The horseman greeted the passerby.

Scene 2: The horseman dismounted. *VP contrast*

Scene 1: The fisherman warned the sailor.

Scene 2: It stormed. *IP contrast*

¹This was suggested to me by Joseph DeVeauh-Geiss

Summary

- I have proposed a paradigm that allows to investigate both **contrastive topic and focus projection** in German and to study their (dis)similarities.
- In a first experiment, **sharp and consistent** results were found in the narrow contrast controls.
- The results for the critical items suggest that for most participants, CT projection to the sentence level was **possible and similar to focus projection**.
- **Open issue:** overall unexpectedly low availability of projection from arguments to VP and sentence level; perhaps due to the way broad contrast was set up.

Outlook

Directions for further research using the paradigm:

- Study projection from and to other categories.
- Study interaction with word order / fronting.

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