



# Testing functional theories of temporal frames of reference

## A case study in corpus-driven cognitive grammar

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Future constructions (verbal expressions of futurity)<sup>1</sup>

Many languages have several different future constructions,  
is this difference conceptually motivated?

We will first look at linguistic theory and talk about different ways of representing future  
within a temporal frame of reference.

Then we will look at a quantitative case study of Norwegian future constructions in which  
we test descriptive theories.

Finally, we will ask how the results of a descriptive study enlighten linguistic theory.

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<sup>1</sup> These expressions typically also have other, non-temporal meanings, this talk will focus on temporal uses

## Temporal frames of reference – basic concepts

The term has been used for a long time in linguistics, but it typically consists of a three-point system that ultimately relates back to Reichenbach's tense system.

Reichenbach (1947) proposed a logical model for representing tense in English

Point of speech (S), Point of event (E), Point of reference (R)

R is a sort of mediating element or narrative frame

In this system, the future can be represented either S,R-E or S-R,E:

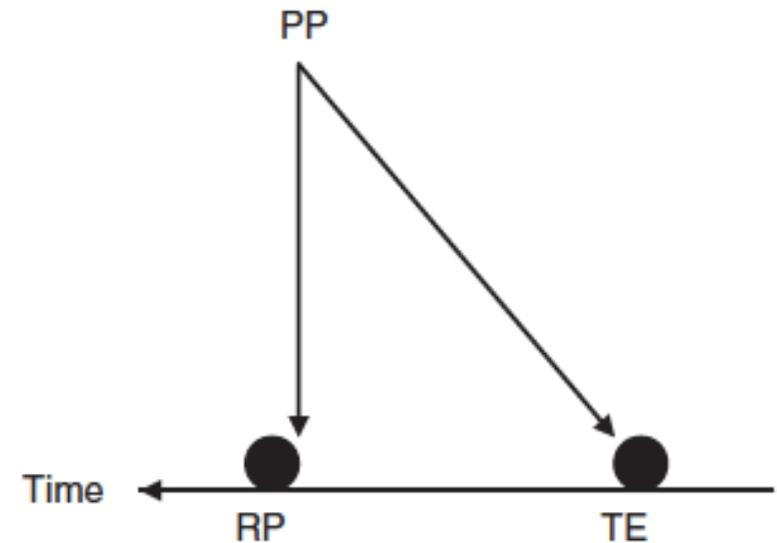
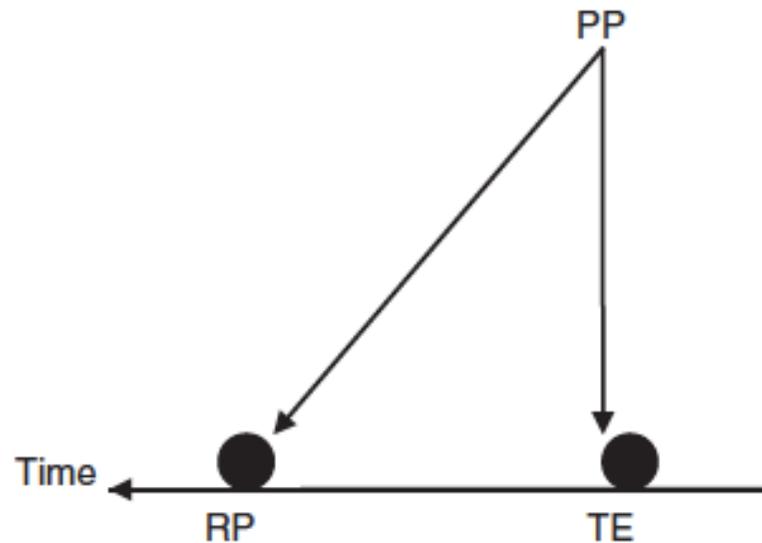


How can we best understand this difference?

## A difference in perspective

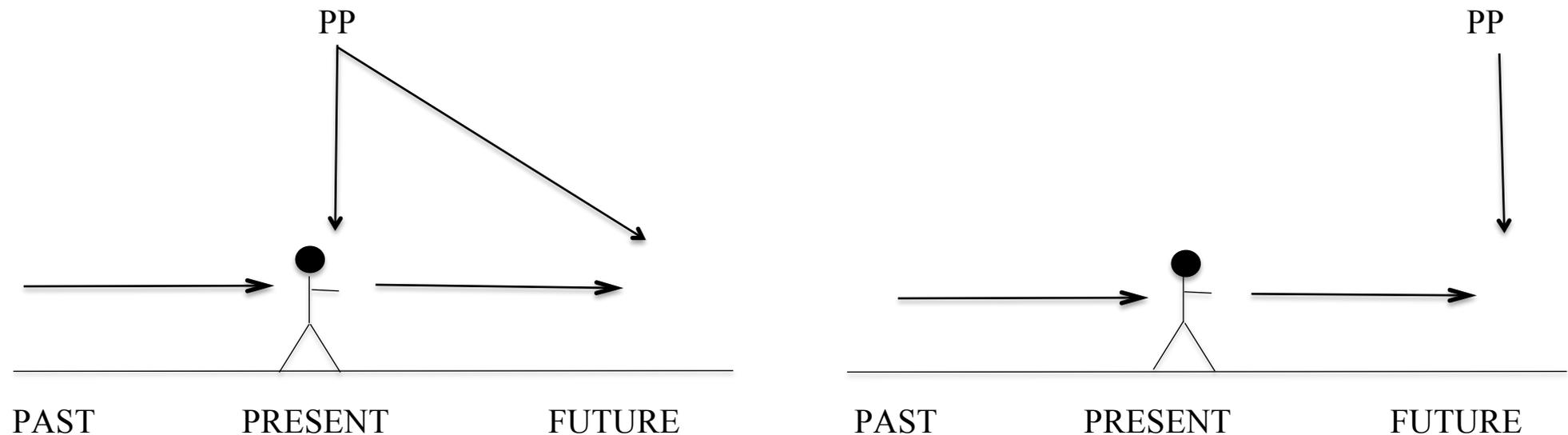
Talmy characterises mental projection over time with a temporal perspective point (PP) from where one can have a retrospective or prospective viewing in a temporal frame. Such viewings can be characterised in visual terms as pertaining to where one places one's 'mental eyes' to 'look out upon a referent structure' (2000)

According to Evans (2013), the same temporal scene can be encoded from two distinct perspective points: the first type involves a PP fixed at the event being located in time (TE), in the second, the PP is fixed at the reference point (RP).



## Two future perspectives

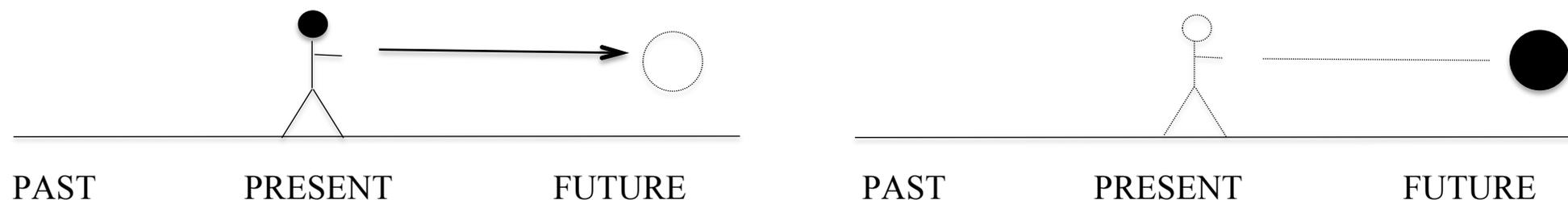
If we apply what we have just said to future constructions, we will get something like this:



Two different future constructions: one in which we regard the future situation from the present, another in which we project ourselves into the future

## Two future perspectives

In other words, one temporal frame of reference focusing on the path leading up to the future situation, and the other on the resulting future situation itself:



It has been proposed (Rebotier 2015) that these two future construals constitute different “poles of futurity”, and that different future constructions are situated relative to these across a continuum.

Let’s have a look at Norwegian, in which there are three different future constructions.

Just like in English, three periphrastic constructions represent futurity in Norwegian

*skal* + INFINITIVE                      (~ *shall* + INFINITIVE)

*vil* + INFINITIVE                        (~ *will* + INFINITIVE)

*kommer til å* + INFINITIVE    (~ *be going to* + INFINITIVE)

Which factors determine the choice of construction?

### Study

1. Dahl (2000)  
Intention-based vs. Prediction-based
2. Christensen (1997)  
Engaged vs. Non-engaged
3. Mac Donald (1982), Christensen (1997)  
Controllability
4. Mac Donald (1982), Vannebo (1985)  
Speaker certainty

### Operationalization

- Intention: 1. Person/Agent  
Prediction: 2/3. Person/No-agent
- Engaged: Already initiated/planned  
Non-engaged: Open
- Controllable vs. Non-controllable  
Acceptable with "As planned"
- Subjective annotation (1-9)  
Two secondary coders

NorGramBank (*Bokmål*: 46.6M words) contains mainly newspapers and literary texts (fiction and non-fiction).

Three independent Behavioural-Profile Based studies (Dirven *et al.* 1982, Geeraerts *et al.* 1994, Gries 2003) 600 manually annotated occurrences (200 each of *skal*, *vil* and *kommer til å*)<sup>2</sup>

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<sup>2</sup> Only future readings selected through manual disambiguation from non-future readings.

## Fixed Effects Multiple Binary Logistic Regression

Predicting <i>skal</i>	Predicting <i>vil</i>	Coefficient	(p)
Engaged	Non-engaged	1.2060	***
Agent	Non-agent	1.0660	**
Controllable	Non-controllable	0.9478	**
1 <sup>st</sup> person	3 <sup>rd</sup> person	0.9401/0.8580	*
Predicting <i>skal</i>	Predicting <i>kommer til å</i>		
Controllable	Non-controllable	1.9883	***
Engaged	Non-engaged	1.3158	***
Predicting <i>vil</i>	Predicting <i>kommer til å</i>		
3 <sup>rd</sup> person	—	0.7873	**
No-agent	Agent	0.6068	*
Controllable	Non-controllable	0.5592	.

# Results

Hypothesis #1: Intentionality



2nd

Hypothesis #2: Engagement



1st

Hypothesis #3: Controllability



3rd

Hypothesis #4: Certainty



## Attribute Value Matrices

SKAL  
+ engagement  
+ intention  
+ controllability  
(+ certainty)

KOMMER TIL Å  
– engagement  
± intention  
– controllability  
(+ certainty)

VIL  
– engagement  
– intention  
± controllability  
(– certainty)

Can we explain these variables (engagement, intention, controllability, certainty) in terms of the two models of temporal frames of reference we have seen?

Is corpus data by itself enough?

Two problems related to corpus data

- 1) Lack of negative evidence
- 2) We are comparing differences in the context

What about examples where the context is identical? One example:

{skal}

{vil}

Det	{kommer til å}	bli	godt	med	ferie
It	FUT	become	good	with	vacation

‘Vacations are going to be great’

Hypothesis: *skal* has a present PP, *vil* has a future PP and *kommer til å* is between the two

How could we test if there are any differences between these?

## Acceptability judgements / Response time modifying the temporal context

	{skal}						
	{?vil}						
<b>Nå</b>	{?kommer til å}	det bli	godt	med	ferie		
<b>Now</b>	FUT	it	become good	with	vacation		

	{skal}						
	{vil}						
<b>Det</b>	{kommer til å}	bli	godt	med	ferie	<b> neste sommer</b>	
<b>It</b>	FUT	become	good	with	vacation	<b> next summer</b>	

# Future research

Eye-tracking using illustrations:

	{skal}				
	{vil}				
Det	{kommer til å}	bli	godt	med	ferie
It	FUT	become	good	with	vacation

‘Vacations are going to be great’

A: Present viewpoint



B: Future viewpoint



**Thank you!**

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