

A Tableau Prover for Natural Logic and Language

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Seminar by Liam

6.11.1

Time Flies Like an Arrow

Fruit Flies Like a Banana

D

"Time flies like an arrow. Fruit flies like a banana." What does that mean?



View other drafts 



The phrase "Time flies like an arrow. Fruit flies like a banana" is a humorous saying that is often used to illustrate the concept of time passing quickly. The first sentence is a metaphor, comparing the speed of time to the speed of an arrow. The second sentence is a pun, using the word "flies" to mean both "move quickly" and "insects". The phrase can be interpreted in two ways:

- Time passes quickly, like an arrow flies through the air.
- Fruit flies move quickly, like bananas fly through the air.

The phrase is often used in a humorous or lighthearted way, but it can also be used to express a more serious sentiment about the passing of time.





ChatGPT 4o ▾



What can I help with?

Ask anything



ChatGPT can make mistakes. Check important info.



The Young Man _____

The Young Man Drank



The Young Man Drank

Noun + Verb = Sentence?

plus
interaktive
Version
& App



A1

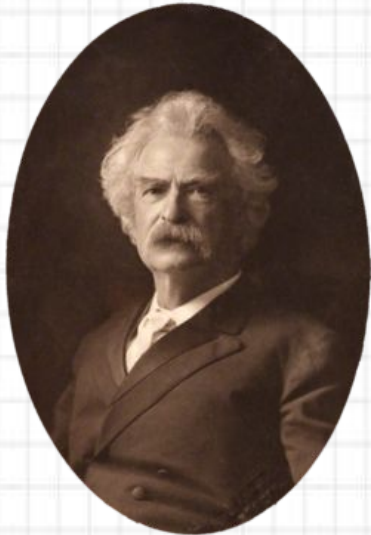
MOMENTE

DEUTSCH ALS FREMDSPRACHE

Kursbuch

Hueber

“whenever the literary german dives into a sentence, this is the last you are going to see of him till he emerges on the other side of his atlantic with his verb in his mouth.”



-Mark Twain (The Awful German Language)

His Bird Flew Outside

Article-Noun-Verb-Location

Noun does Verb in Location

Sein Vogel nach draußen geflogen

Article-Noun-Verb-Location-VERB

Noun does Verb in Location

His Bird Flew Outside

Article-Noun-Verb-Location

Noun does Verb in Location

Outside were his Birds that are flying

Location-Article-Noun-Verb

Noun does Verb in Location

Thomas Mann
Der Zauberberg
Roman



„Dass er, trotz der beißenden Kälte, ohne Hut und Mantel, das Haar vom Wind zerzaust, die Schuhe durchnässt vom Schnee, ohne an Anstand oder Konsequenzen zu denken, vor den Augen des Personals und der anderen Patienten, über den gefrorenen Hof und die Treppe zu ihrem Zimmer, gerannt ist.“

“That he, despite the biting cold, without hat or coat, his hair tousled by the wind and his shoes soaked through from the snow, with no thought for propriety or consequence, in full view of the staff and other patients, across the frozen courtyard and up the steps to her room, had run...”

flight : N

Noun

Miami : NP

Noun Phrase

cancel : (S\NP)/NP

Huh??

$X/Y \ Y \Rightarrow X$

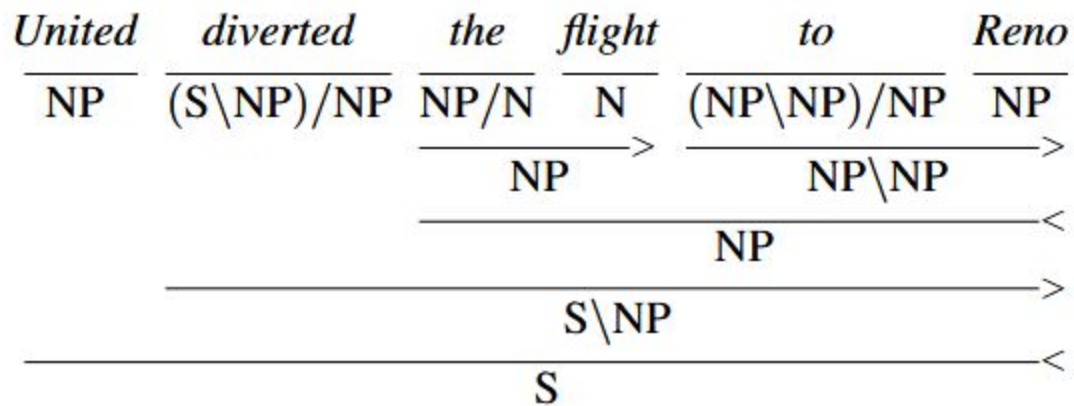
$Y \ X \backslash Y \Rightarrow X$

"John" "loves" "Mary"

NP (S\NP)/NP NP X/Y Y \Rightarrow X

NP (S\NP) Y X\Y \Rightarrow X

S



Grandmother of Eight Makes Hole in One

Milk Drinkers Turn to Powder

The Young Man _____

The Young Man The Ship ✖

Noun + Noun != Sentence

The Young Man The Ship 

Noun + Verb + Noun = Sentence

$$\text{on}_{\text{np,pp}}(\text{ice}_n)_{\text{np}} \longrightarrow \text{on}_{\text{np,pp}}(\text{a}_{\text{n,np}}\text{ice}_n)$$

$$\text{run}_{\text{np,s}}(\text{dogs}_n)_{\text{np}} \longrightarrow \text{run}_{\text{np,s}}(\text{s}_{\text{n,np}}\text{dog}_n)$$

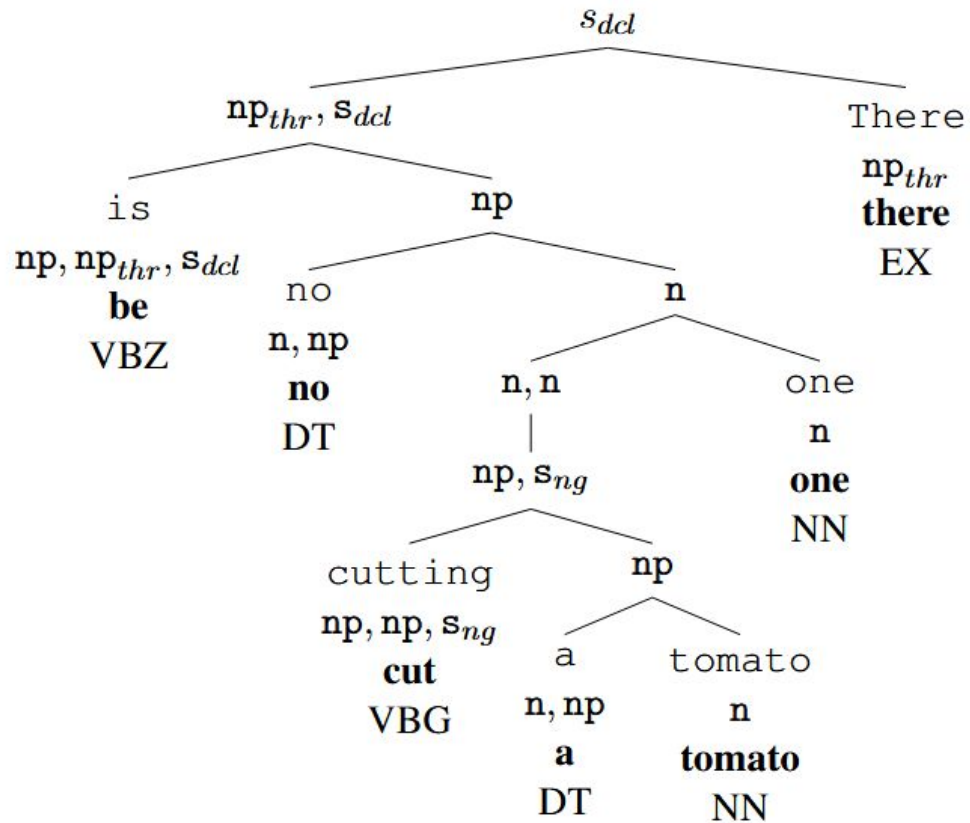
$$(\text{Dow}_{\text{n,n}}^{\text{PER}} \text{Jones}_n^{\text{PER}})_{\text{np}} \longrightarrow \text{Dow_Jones}_{\text{np}}$$

$$(\text{two}_{\text{n,n}} \text{dogs}_n)_{\text{np}} \longrightarrow \text{two}_{\text{n,np}} \text{dogs}_n$$

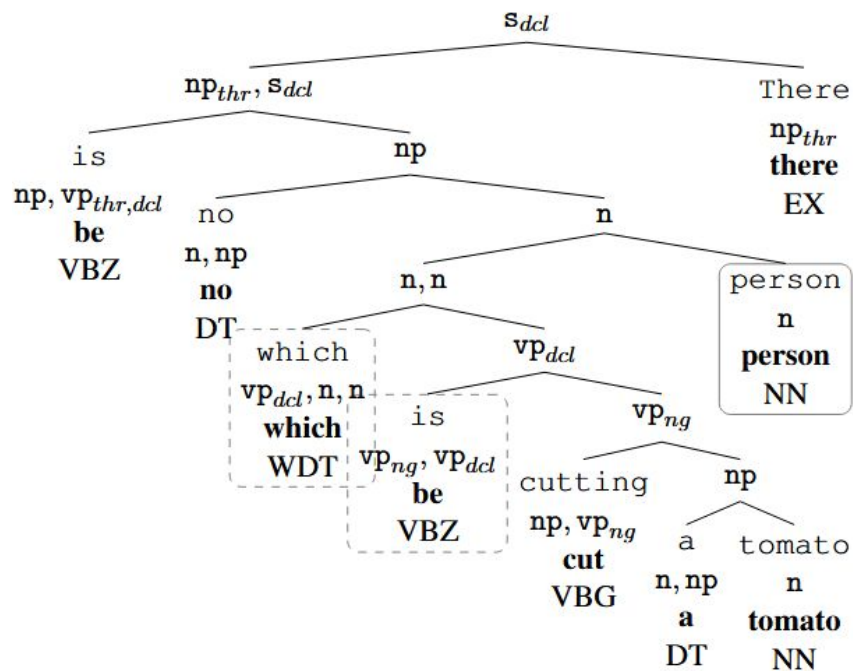
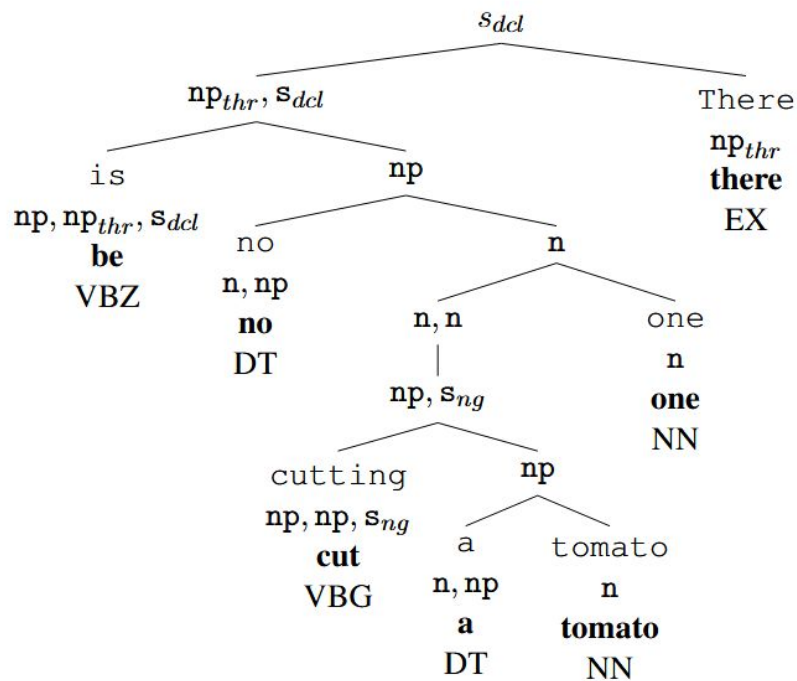
$$\text{her}_{(\text{pp,n}),\text{np}} \text{car}_{\text{pp,n}} \longrightarrow \text{her}_{\text{n,np}} \text{car}_n$$

$$\text{who}_w V(Q_{\text{n,np}} N) \longrightarrow Q_{\text{n,np}}(\text{who}_{w'} V N)$$

$$\text{nobody} \longrightarrow \text{no}_{\text{n,np}} \text{person}_n$$



NOTE: VP=(S\NP)



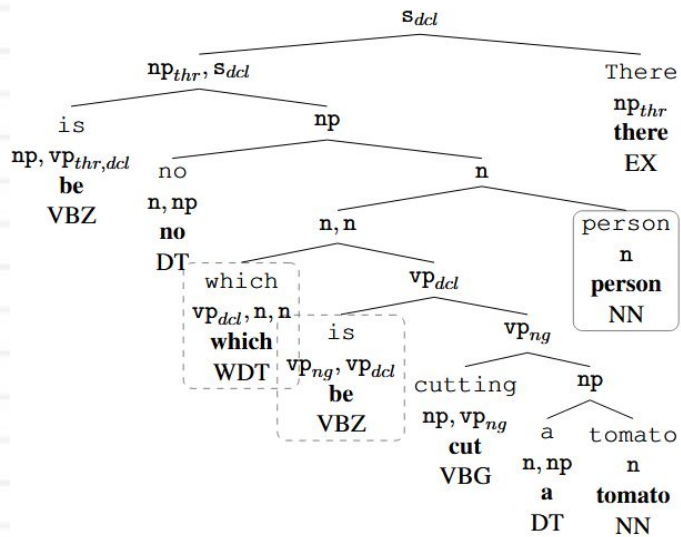
Premise	Label	Hypothesis
A man inspects the uniform of a figure in some East Asian country.	contradiction	The man is sleeping.
An older and younger man smiling.	neutral	Two men are smiling and laughing at the cats playing on the floor.
A soccer game with multiple males playing.	entailment	Some men are playing a sport.

Every man is working

Everybody who is working has an expensive car

Every man owns a car

Entailment



$\lambda((\lambda 1 (\lambda 1)) (\lambda 2 1))$

$\mathbf{b}(\mathbf{no}(\mathbf{w}(\mathbf{b}(\mathbf{c}(\mathbf{a} \mathbf{t}))))\mathbf{p}))\mathbf{th}$

$\mathbf{no} \left(\mathbf{w}(\mathbf{b}(\lambda x. \mathbf{a} \mathbf{t}(\lambda y. \mathbf{c} y x)))\mathbf{p} \right) (\lambda z. \mathbf{b} z \mathbf{th})$

$\mathbf{a} \mathbf{t}(\lambda x. \mathbf{no} \left(\mathbf{w}(\mathbf{b}(\mathbf{c} x))\mathbf{p} \right) (\lambda z. \mathbf{b} z \mathbf{th}))$

Every penguin is working

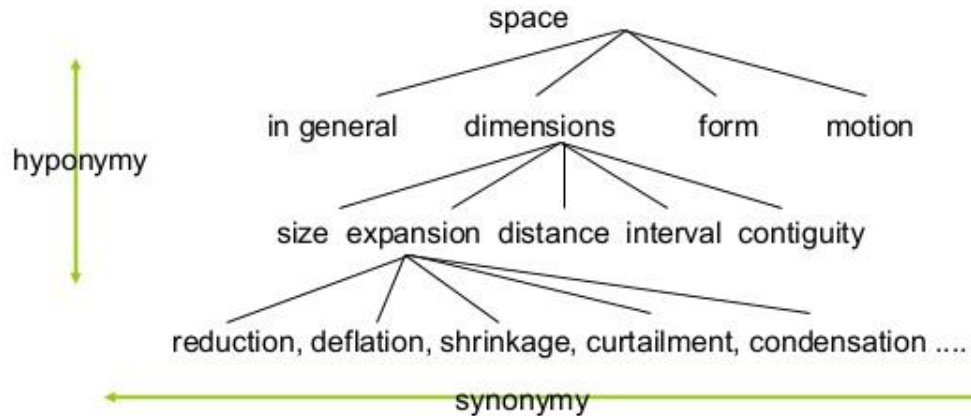
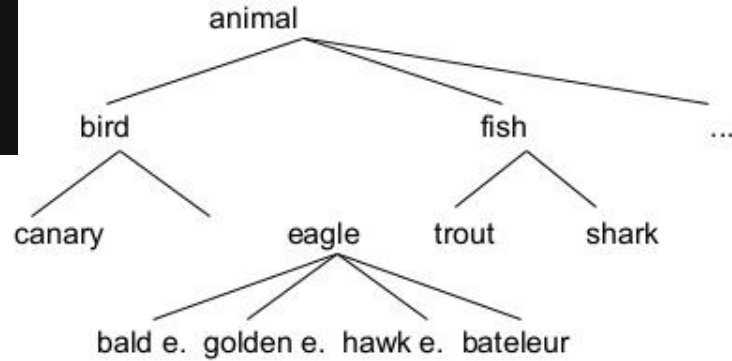
Every bird who is working has an expensive car

Every penguin owns a car

ENTAILMENT

WordNet

A Lexical Database for English



$$\frac{X \ A \ B : [] : \mathbb{F}}{A : [c] : \mathbb{T} \quad B : [c] : \mathbb{F}} \forall_F$$

s.t. $X \in \{\mathbf{all}, \mathbf{every}\}$
and c is a *fresh* term

$$\frac{A \ B : [\vec{C}] : \mathbb{X}}{A : [B, \vec{C}] : \mathbb{X}} \text{PUSH}$$

$$\frac{A : [B, \vec{C}] : \mathbb{X}}{A \ B : [\vec{C}] : \mathbb{X}} \text{PULL}$$

$$\frac{A : [\vec{C}] : \mathbb{T} \quad B : [\vec{C}] : \mathbb{F}}{\times} \leq \times$$

s.t. $A \leq B$

$$\frac{X \ A \ B : [] : \mathbb{F}}{A : [d] : \mathbb{F} \quad B : [d] : \mathbb{F}} \exists_F$$

s.t. $X \in \{\mathbf{some}, \mathbf{a}\}$ and d is an *old* term

$$\frac{\text{not } A : [\vec{C}] : \mathbb{X}}{A : [\vec{C}] : \bar{\mathbb{X}}} \text{NOT}$$

The Dog is outside and warm

$(\lambda 1, \text{the} @ \text{dog} @ (\text{and} @ \text{warm} @ \text{outside} @ (\text{be} @ 1)))$

$$\frac{A : [B, \vec{C}] : \mathbb{X}}{A B : [\vec{C}] : \mathbb{X}} \text{PULL}$$

Dog is {Warm, Outside}

PULL

Outside Dog is {Warm}

$$\frac{A B : [\vec{C}] : \mathbb{X}}{A : [B, \vec{C}] : \mathbb{X}} \text{PUSH}$$

Outside Dog is {Warm}

PUSH

Outside is (a) {Warm, Dog}

not all birds fly \rightarrow some bird does not fly

1 : not all bird fly : [] : \mathbb{T}
 2 : some bird (not fly) : [] : \mathbb{F}
 |
 3^{PUSH[1]} : not all bird : [fly] : \mathbb{T}
 |
 4^{PUSH[3]} : not all : [bird, fly] : \mathbb{T}
 |
 5^{NOT[4]} : all : [bird, fly] : \mathbb{F}
 |
 6^{PULL[5]} : all bird : [fly] : \mathbb{F}
 |
 7^{PULL[6]} : all bird fly : [] : \mathbb{F}
 |
 8 ^{$\forall_F[7]$} : bird : [c] : \mathbb{T}
 9 ^{$\forall_F[7]$} : fly : [c] : \mathbb{F}

$$\frac{X \ A \ B : [] : \mathbb{F}}{A : [d] : \mathbb{F} \quad B : [d] : \mathbb{F}} \exists_F$$

 s.t. $X \in \{\text{some}, \text{a}\}$ and d is an *old* term

10 ^{$\exists_F[2]$} : bird : [c] : \mathbb{F} 11 ^{$\exists_F[2]$} : not fly : [c] : \mathbb{F}
 12 ^{$\leq \times [8,10]$} : \times |
 13^{NOT[11]} : fly : [c] : \mathbb{T}
 14 ^{$\leq \times [9,13]$} : \times

$$\frac{X \ A \ B : [] : \mathbb{F}}{A : [c] : \mathbb{T} \quad B : [c] : \mathbb{F}} \forall_F$$

 s.t. $X \in \{\text{all}, \text{every}\}$
 and c is a *fresh* term

ID	Gold/LP	Problem (premise ? conclusion)
3670	E/N	It is raining on a walking man ? A man is walking in the rain
219	E/N	There is no girl in white dancing ? A girl in white is dancing
5248	N/E	Someone is playing with a toad ? Someone is playing with a frog
8490	N/C	A man with a shirt is holding a football ? A man with no shirt is holding a football
7402	N/C	There is no man and child kayaking through gentle waters ? A man and a young boy are riding in a yellow kayak
1431	C/C	A man is playing a guitar ? A man is not playing a guitar
8913	N/C	A couple is not looking at a map ? A couple is looking at a map

Measure+ System	Prec%	Acc%
Illinois-LH	81.56	84.57
ECNU	84.37	83.64
UNAL-NLP	81.99	83.05
SemantiKLUE	85.40	82.32
The Meaning Factory	93.63	81.59
LangPro Hybrid-800	97.95	81.35
UTexas	97.87	73.23
Prob-FOL	-	76.52
Nutcracker	-	78.40
Baseline (majority)	-	56.69