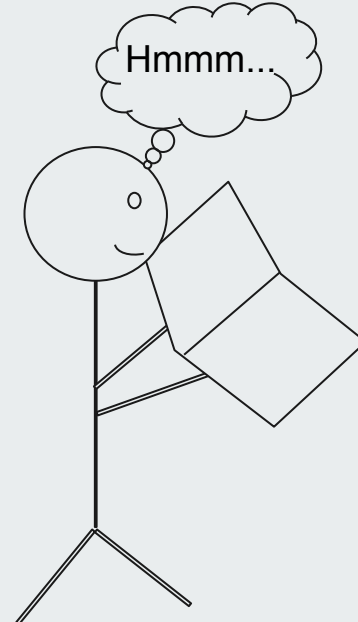




In a Manner of Speaking...

An Intro to Linguistics





WELCOME!!!!



WELCOME!!!!



Julia Gong // jxgong@stanford.edu



Ben Newman // blnewman@stanford.edu

We like CS and Linguistics!!



WELCOME!!!!

This class comes to you in two parts:



WELCOME!!!!

This class comes to you in two parts:

1. **CRASH COURSE Linguistics**



WELCOME!!!!

This class comes to you in two parts:

1. **CRASH COURSE Linguistics**
2. **Discussions**

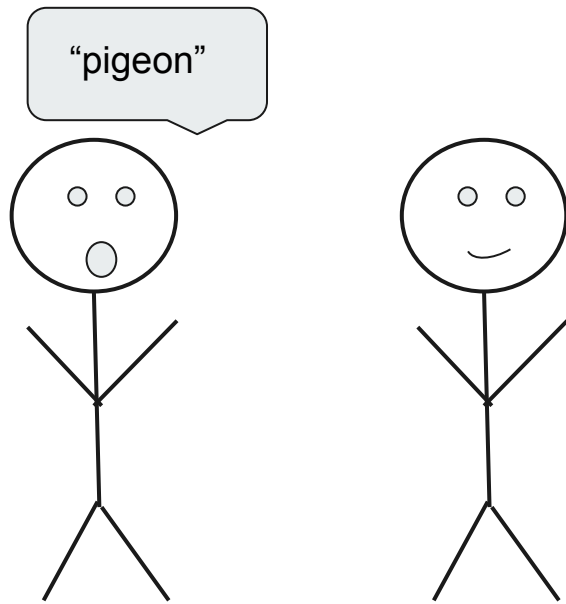
Overview of Linguistics:

Overview



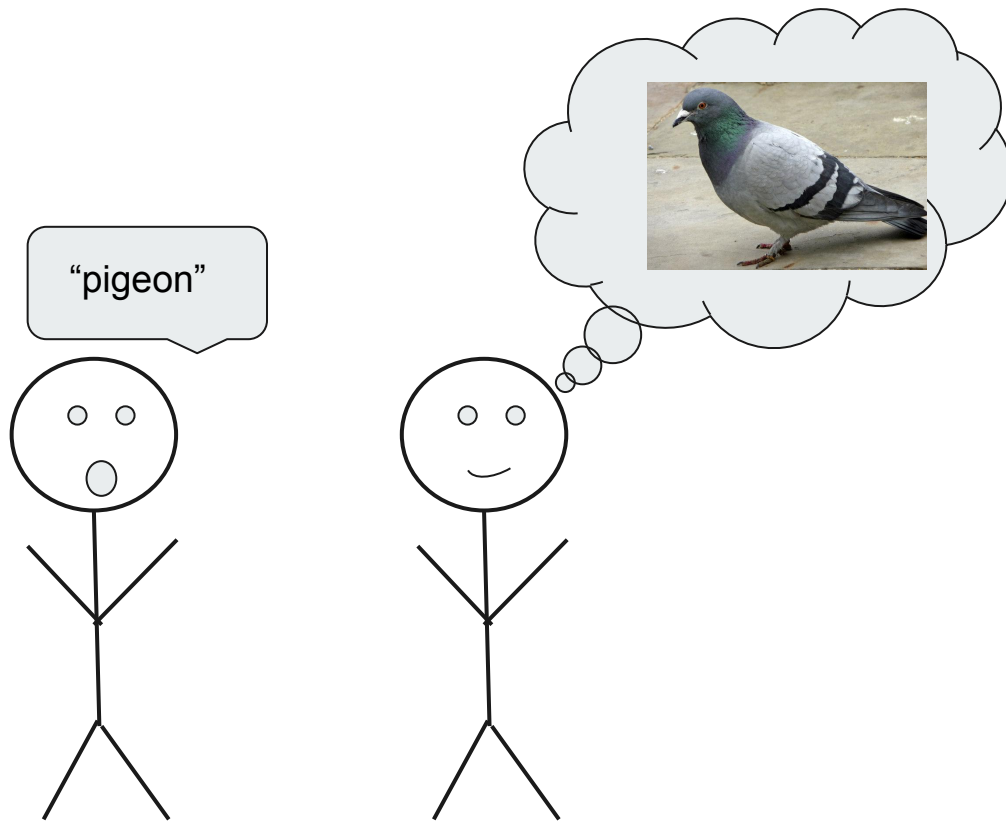


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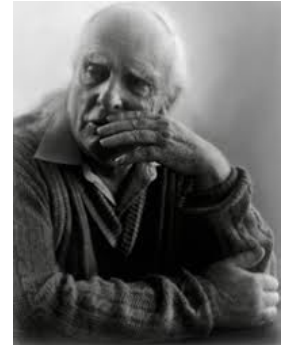
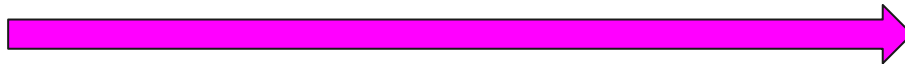
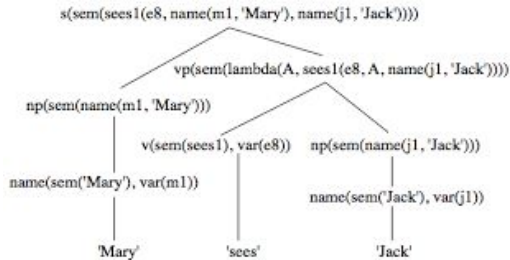
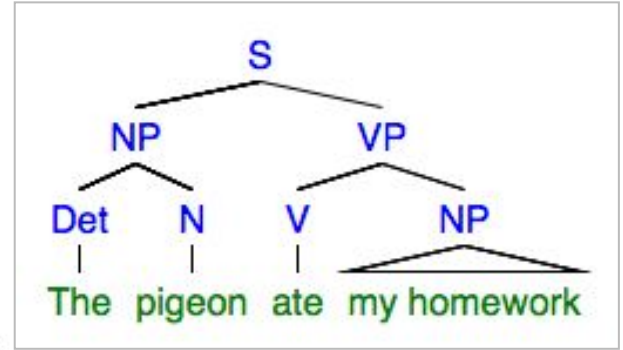
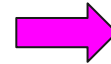
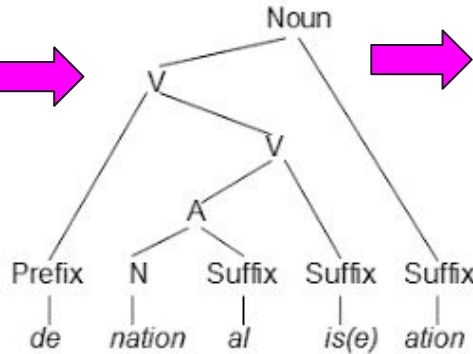
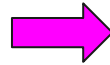
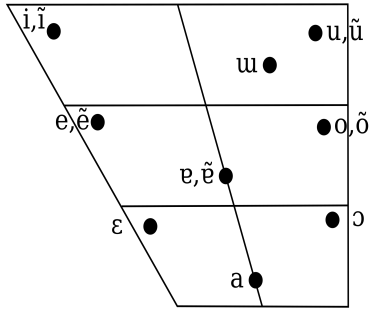
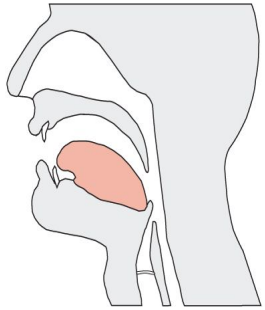




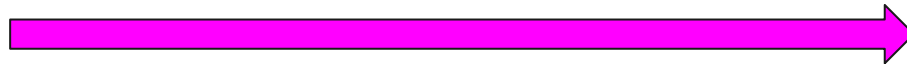
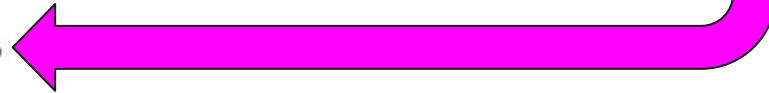
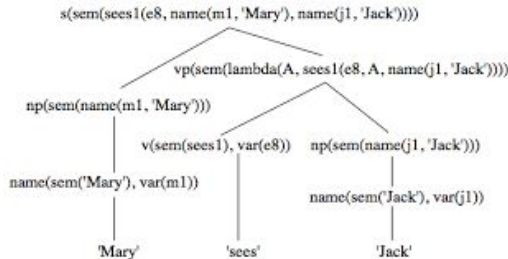
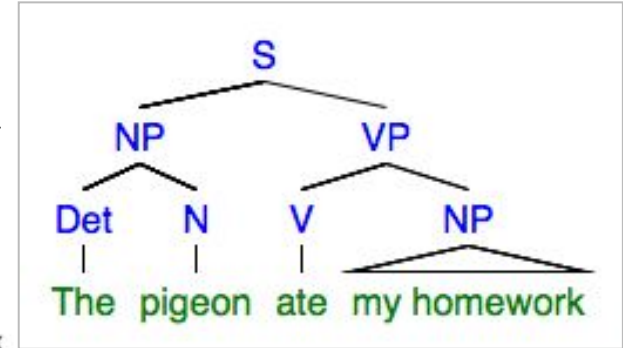
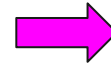
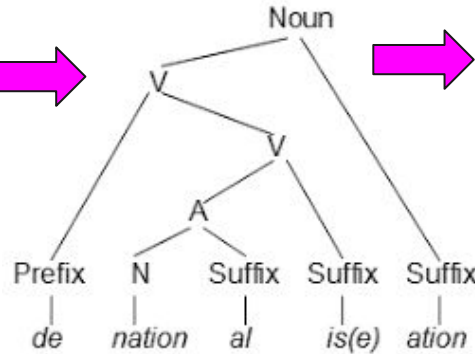
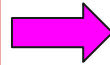
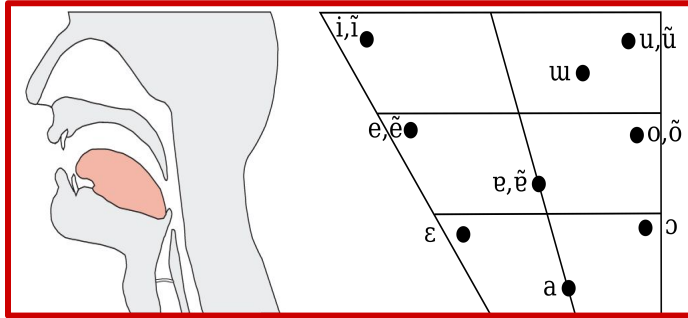
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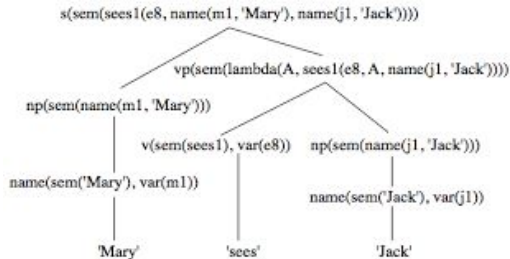
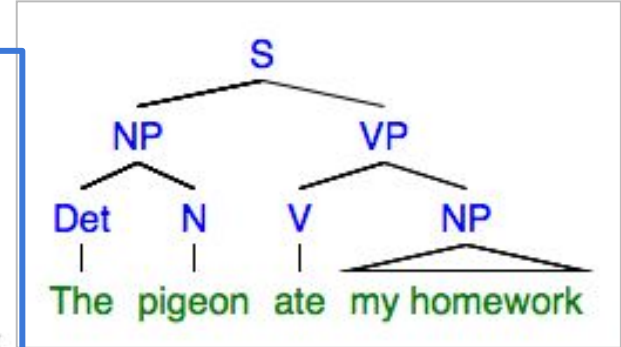
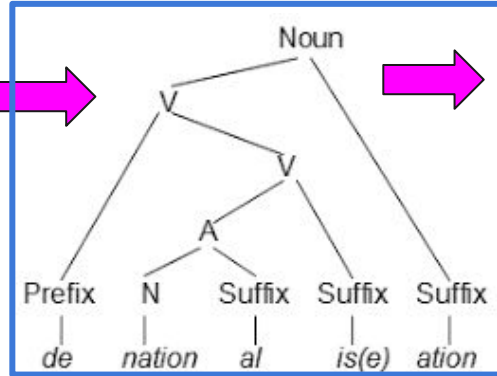
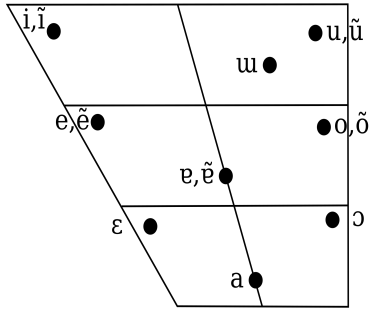
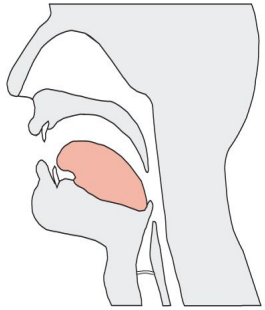
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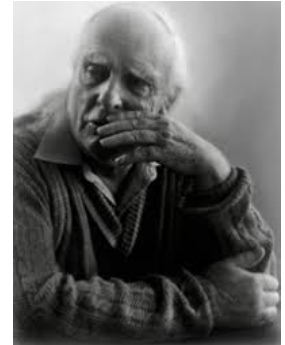
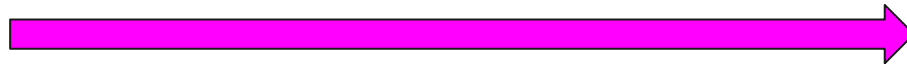
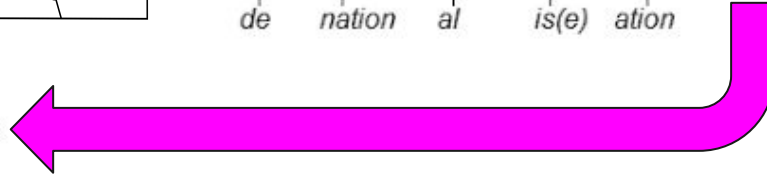
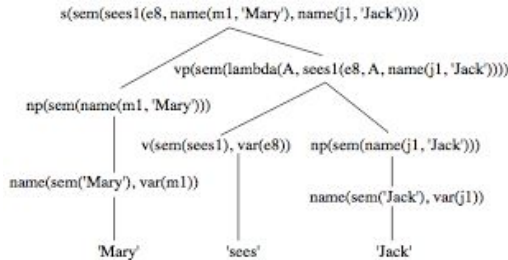
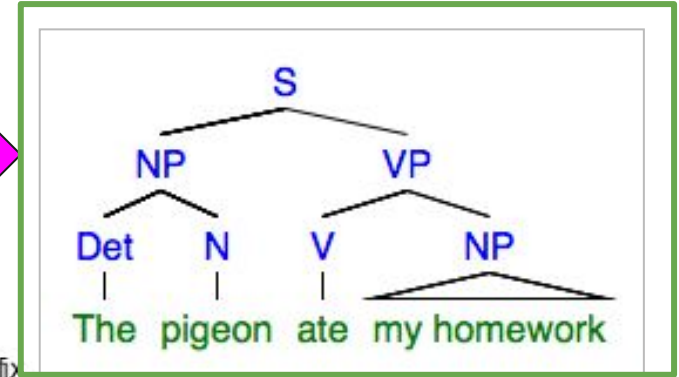
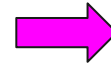
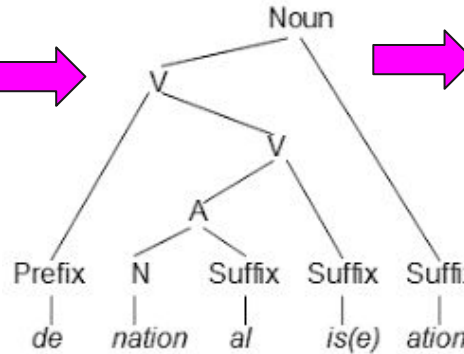
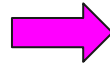
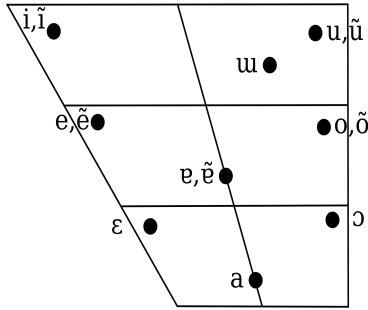
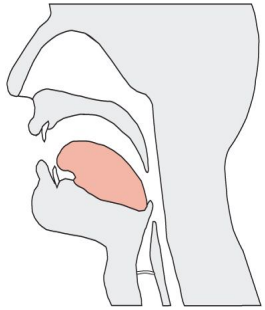
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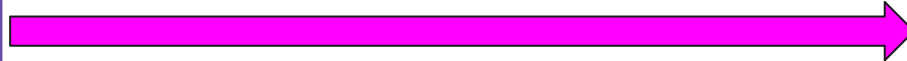
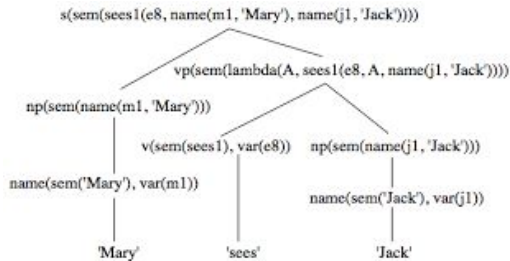
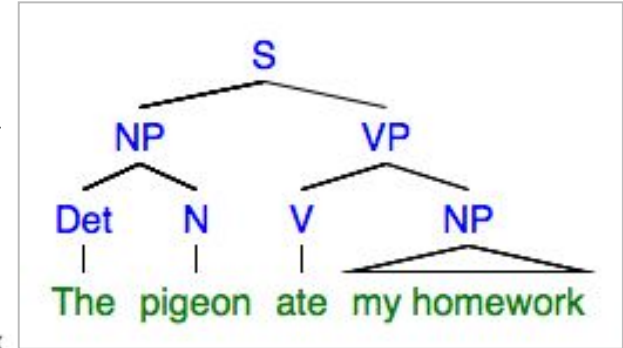
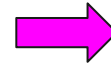
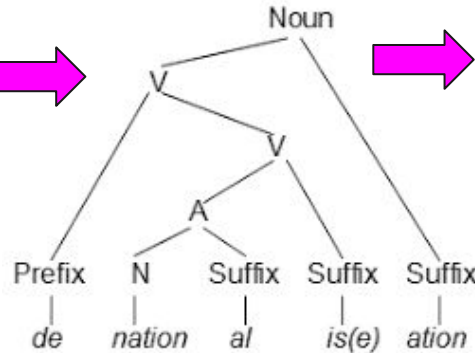
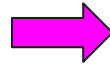
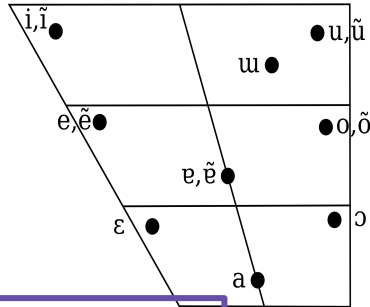
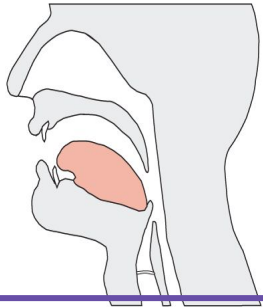
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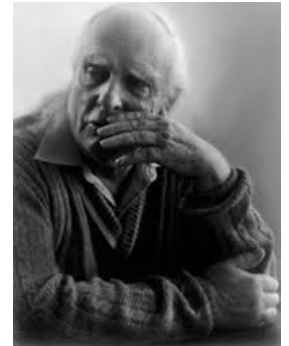
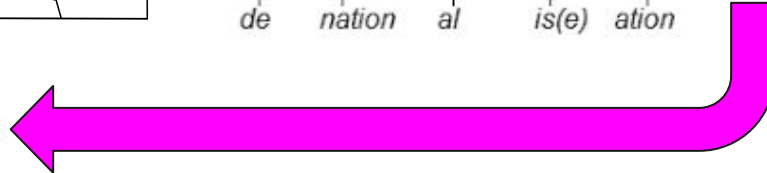
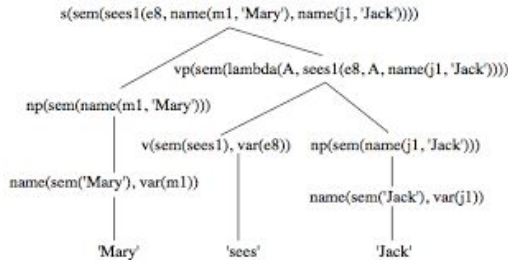
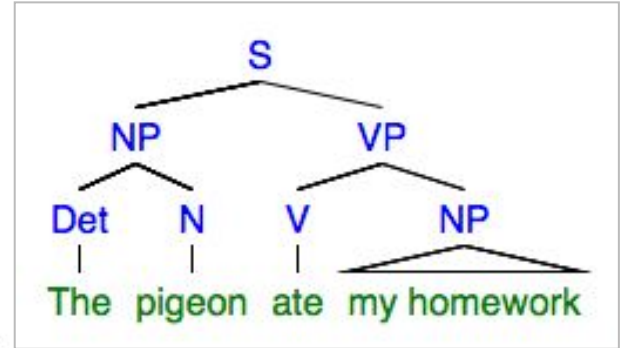
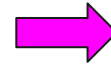
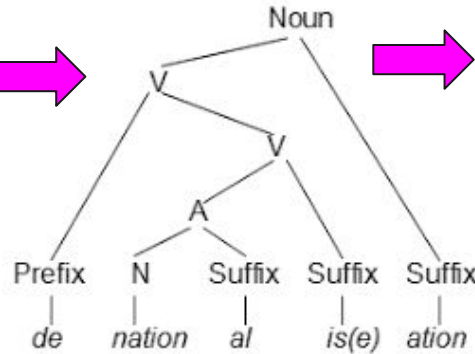
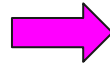
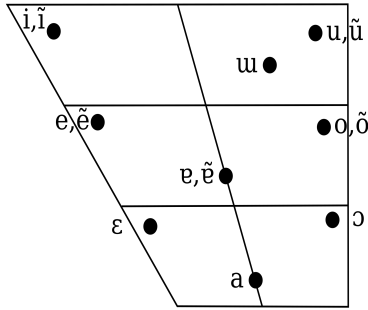
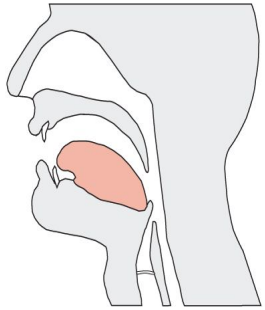
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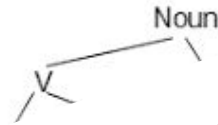
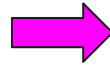
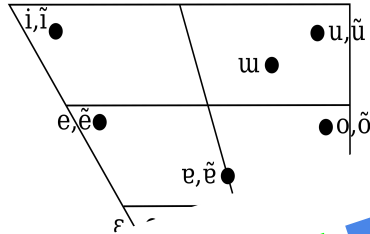
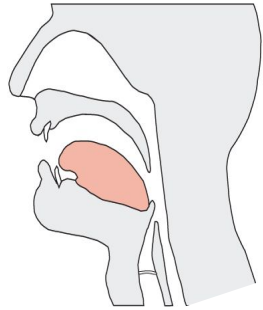
But there's a lot in between...



But there's a lot in between...



But there's a lot in between...



Suffix

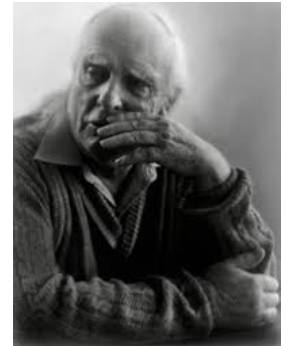
al

is(e)

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The pigeon ate my homework



s(s

np(sem(nam

name(sem('Mary'),

'Mary'

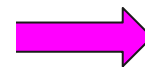
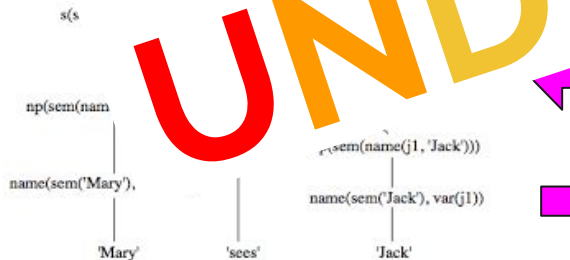
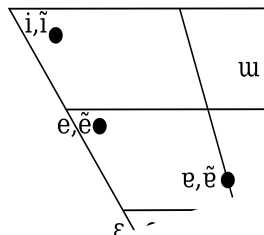
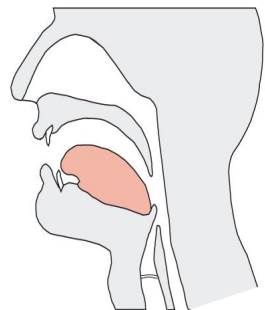
'sees'

sem(name(j1, 'Jack'))

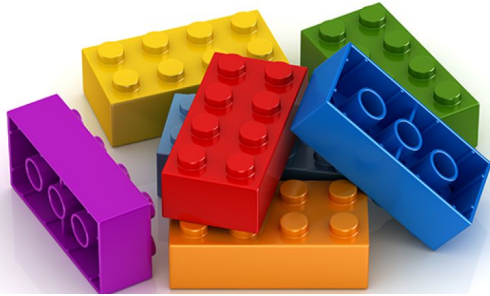
name(sem('Jack', var(j1))

'Jack'

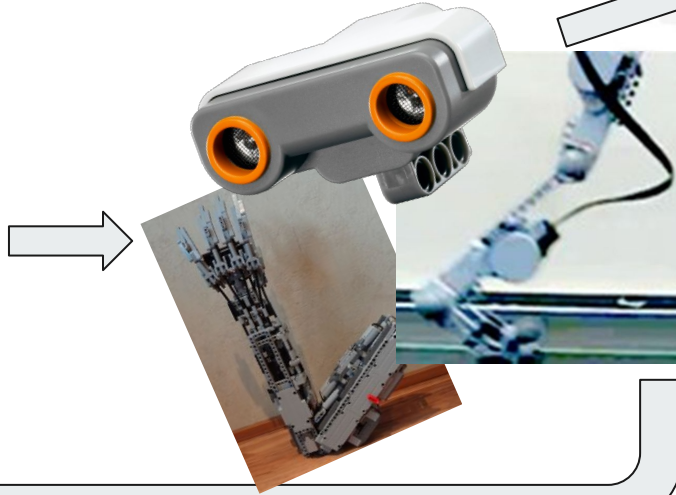
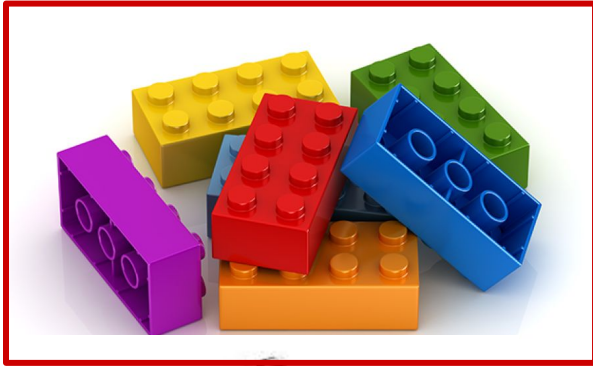
But there's a



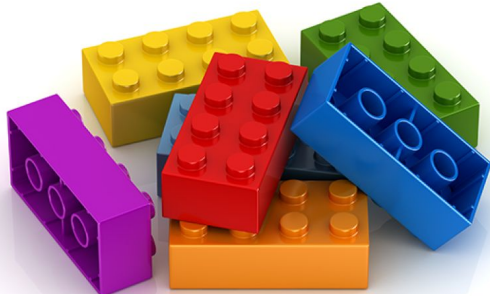
Let's talk Lego instead



Let's talk Lego instead



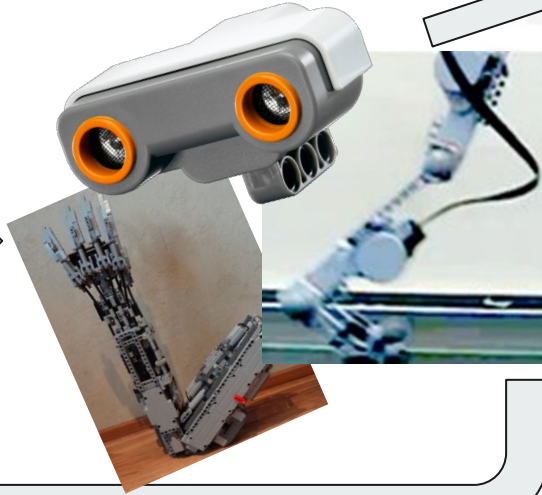
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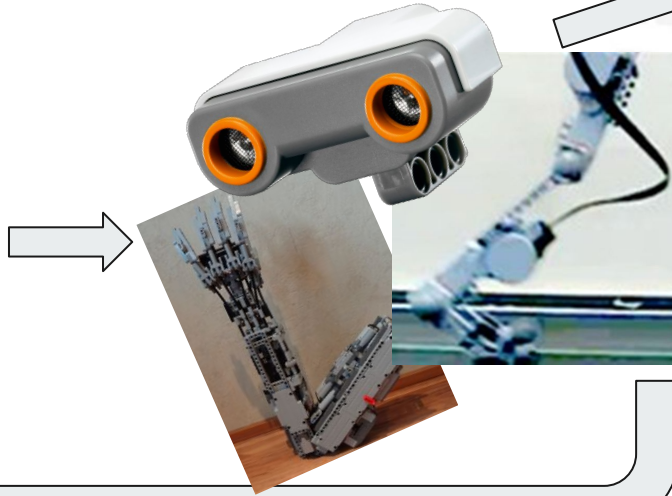
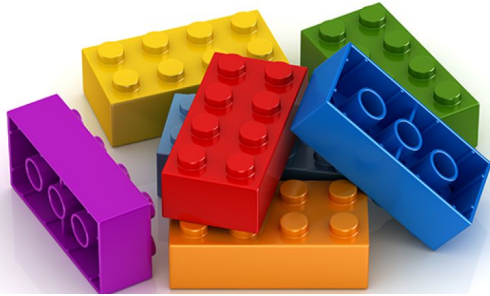
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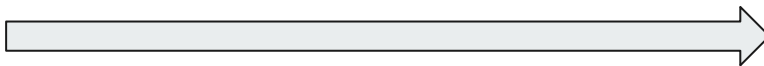
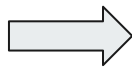
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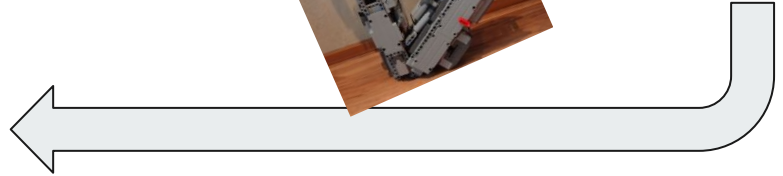
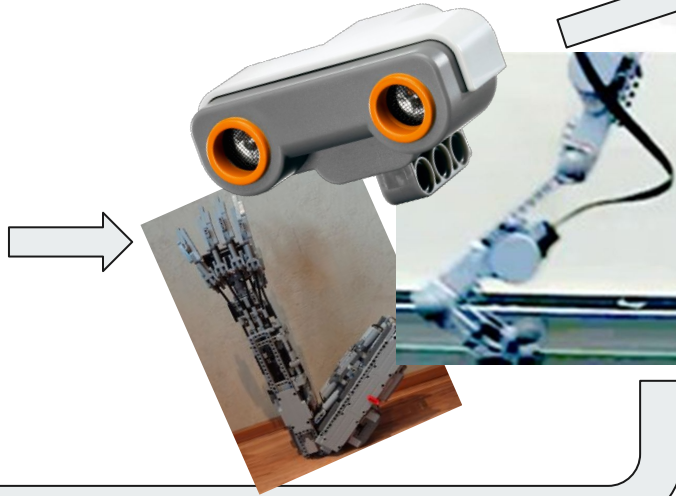
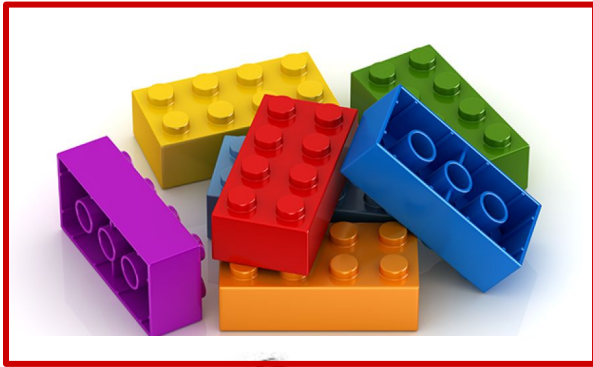
Let's talk Lego instead



Let's talk Lego instead

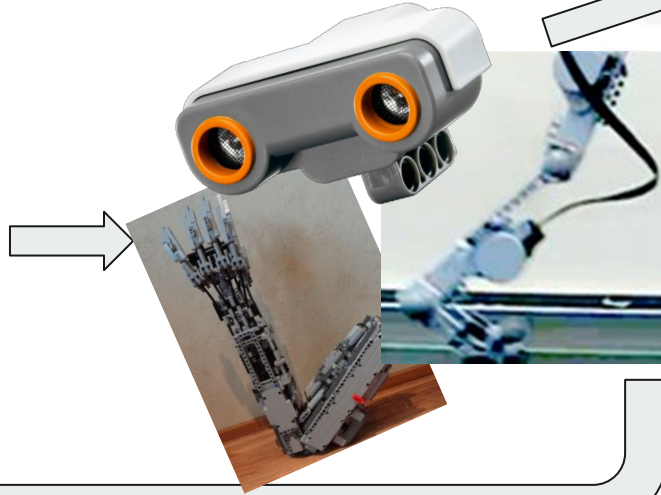


Let's talk Lego instead



Let's talk Lego instead

PHONOLOGY





Phonology



Phonology - The Sounds We Make



Phonology - The Sounds We Make

- Phonemes - individual sounds that make up the words we have

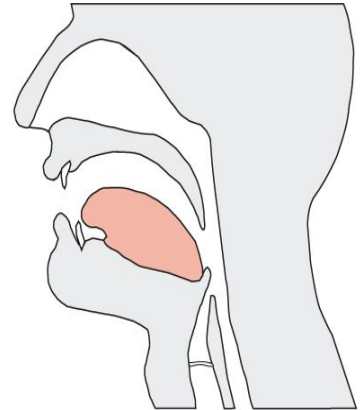


Phonology - The Sounds We Make

- Phonemes - individual sounds that make up the words we have
- Phonemes vary between languages

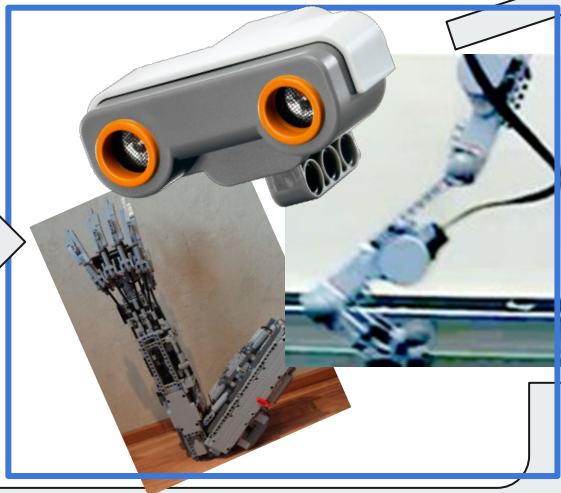
Phonology - The Sounds We Make

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Let's talk Lego instead

PHONOLOGY



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PHONOLOGY

MORPHOLOGY





Morphology - How Words Form



Morphology - How Words Form

- Morphemes - Parts of words
 - Stem/Root
 - Suffix
 - Prefix
 - Plural



Morphology - How Words Form

- Morphemes - Parts of words

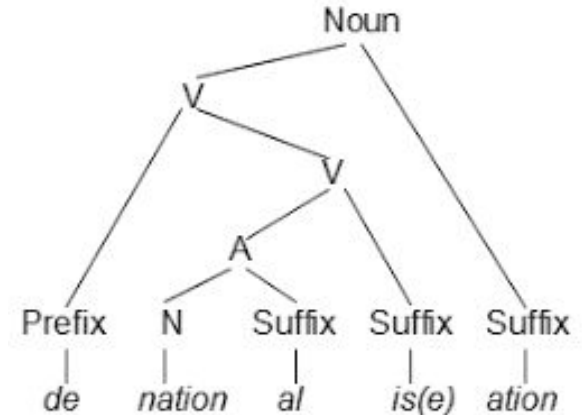
- Stem/Root
- Suffix
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DOG + S = DOGS

Morphology - How Words Form

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DOG + S = DOGS



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PHONOLOGY

MORPHOLOGY



Let's talk Lego instead

PHONOLOGY

MORPHOLOGY

SYNTAX





Syntax



Syntax - How Words are Organized

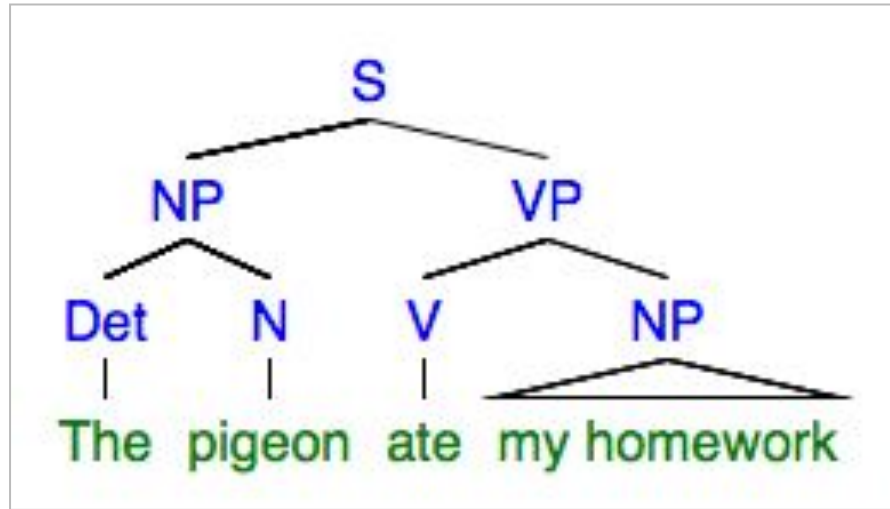


Syntax - How Words are Organized

- Grammar
- Syntactic trees

Syntax - How Words are Organized

- Grammar
- Syntactic trees



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PHONOLOGY

MORPHOLOGY

SYNTAX



Let's talk Lego instead

PHONOLOGY

MORPHOLOGY

SYNTAX

SEMANTICS





Semantics



Semantics - Organization Leads to Meaning

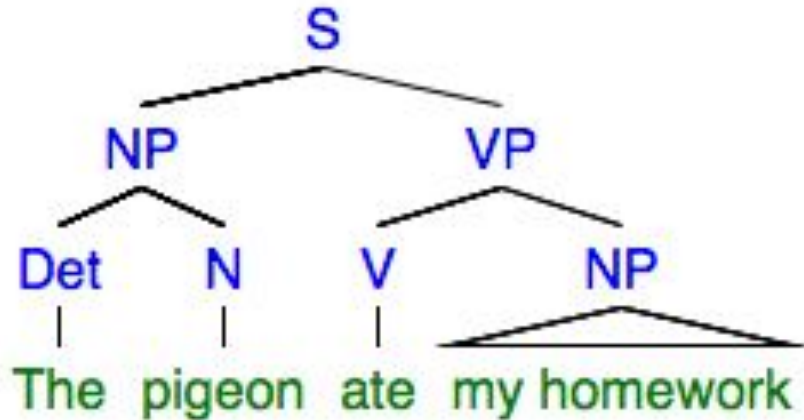


Semantics - Organization Leads to Meaning

- Follow meanings up the tree:

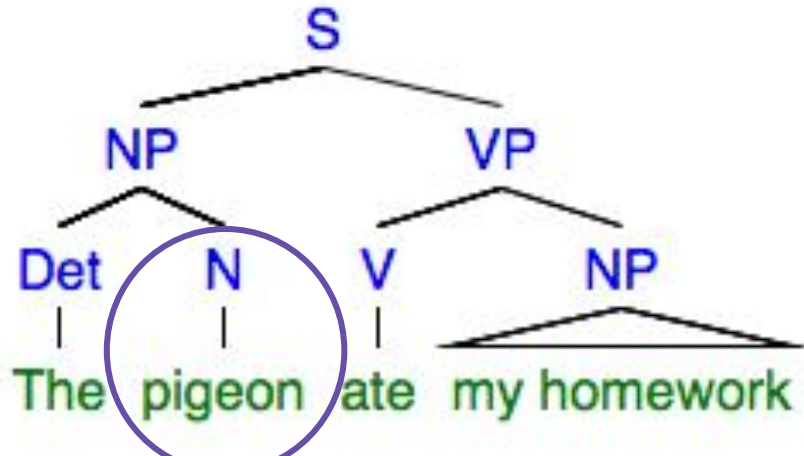
Semantics - Organization Leads to Meaning

- Follow meanings up the tree:



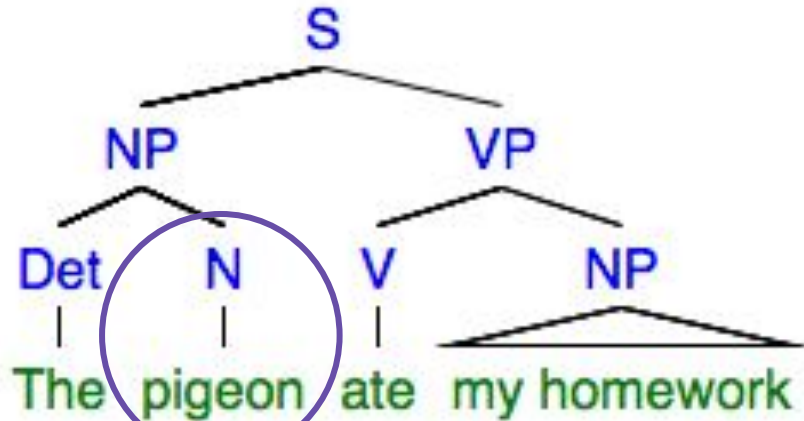
Semantics - Organization Leads to Meaning

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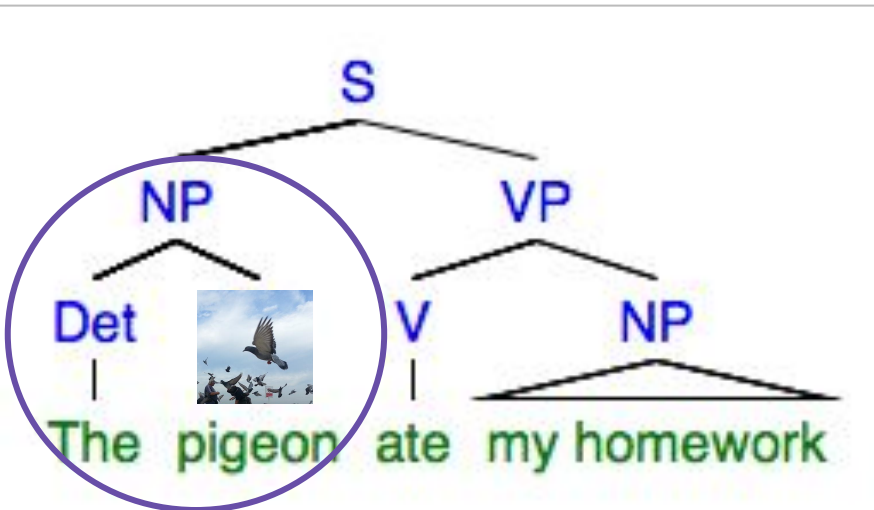
Semantics - Organization Leads to Meaning

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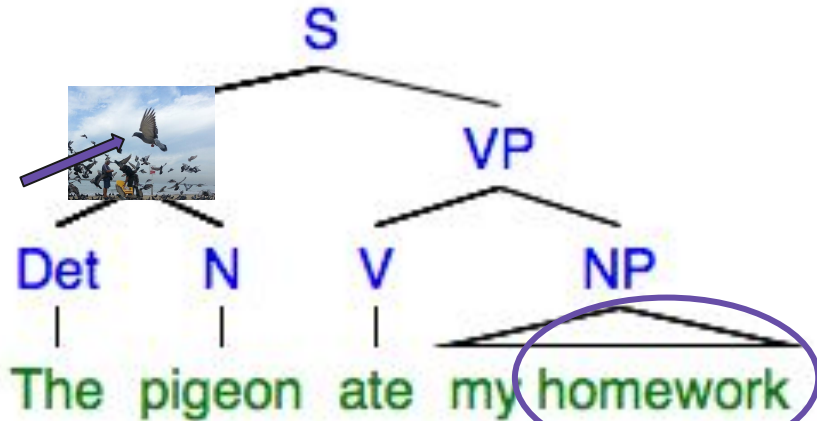
Semantics - Organization Leads to Meaning

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Semantics - Organization Leads to Meaning

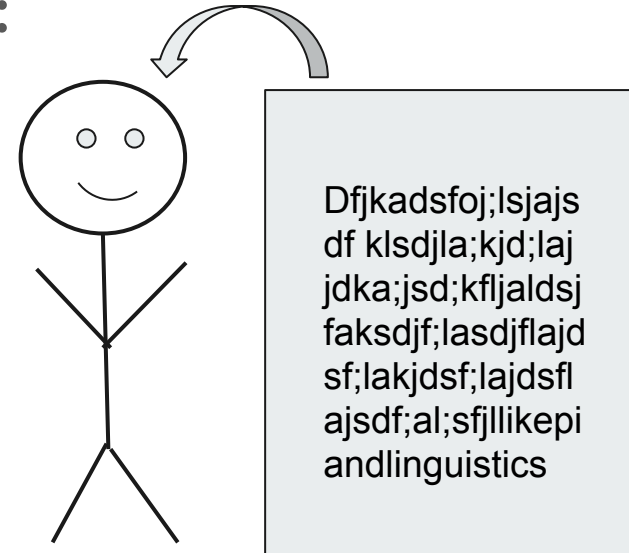
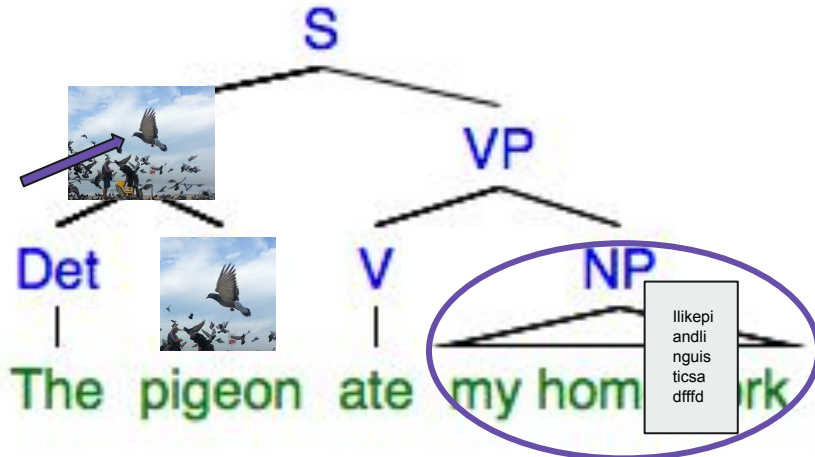
- Follow meanings up the tree:



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andlinguistics

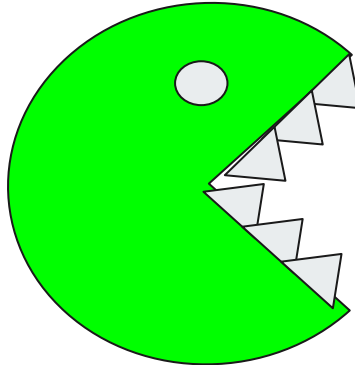
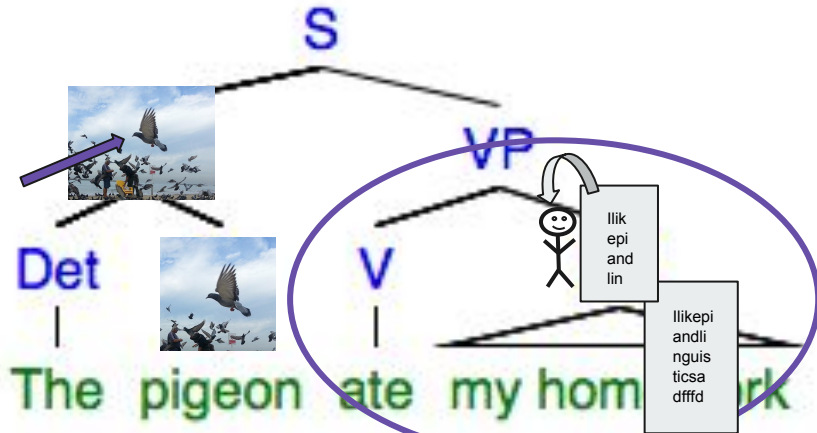
Semantics - Organization Leads to Meaning

- Follow meanings up the tree:



Semantics - Organization Leads to Meaning

- Follow meanings up the tree:

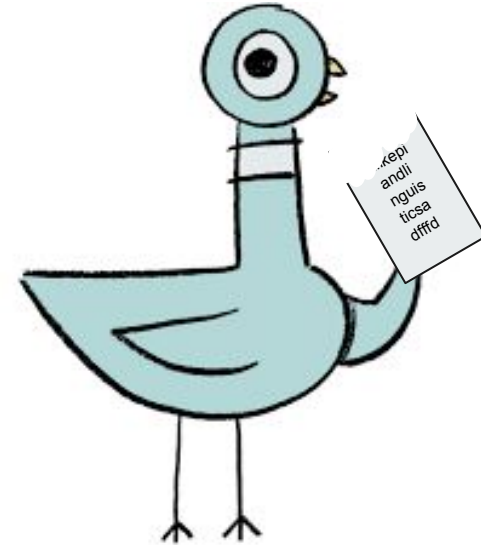
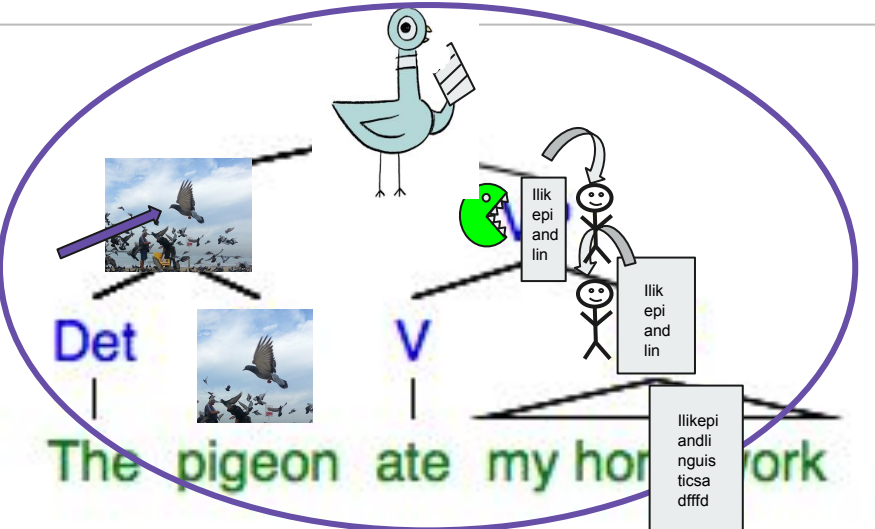


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andlinguistics



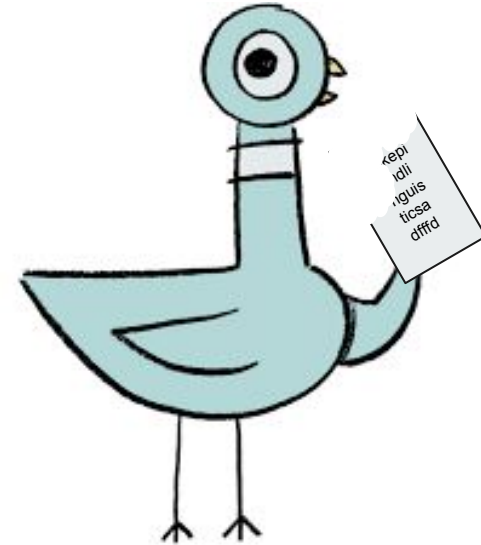
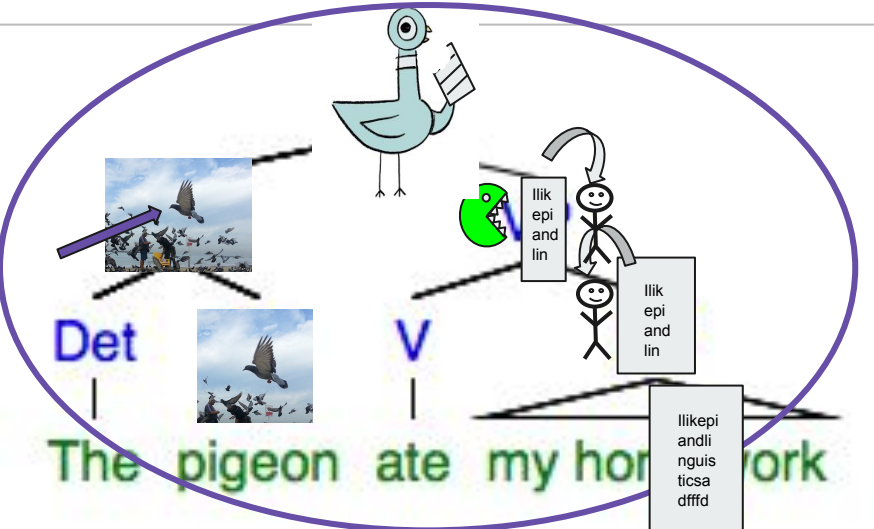
Semantics - Organization Leads to Meaning

- Follow meanings up the tree:



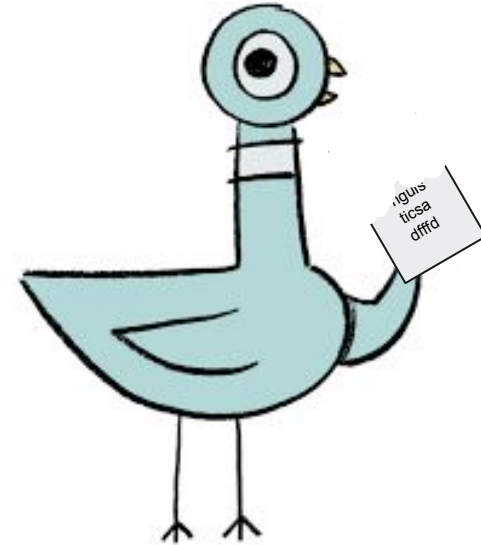
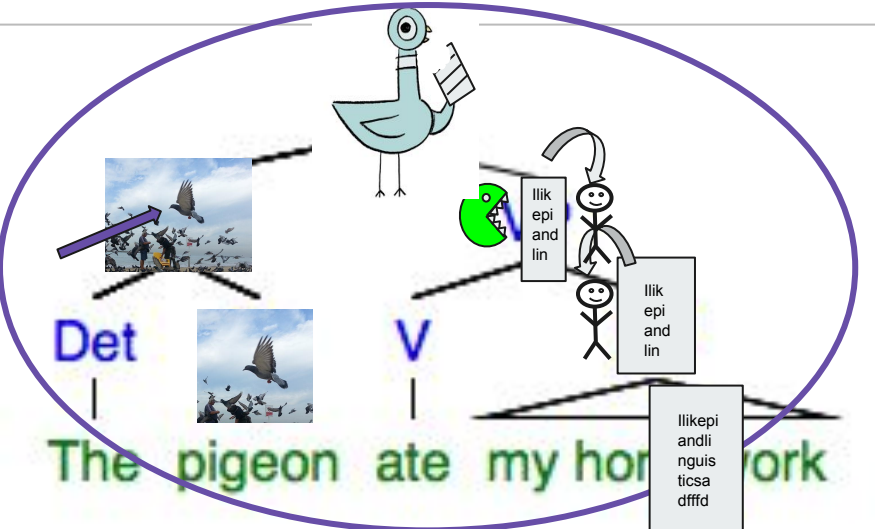
Semantics - Organization Leads to Meaning

- Follow meanings up the tree:

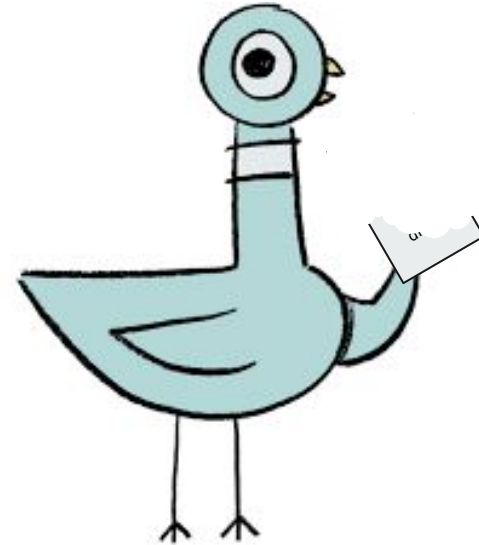
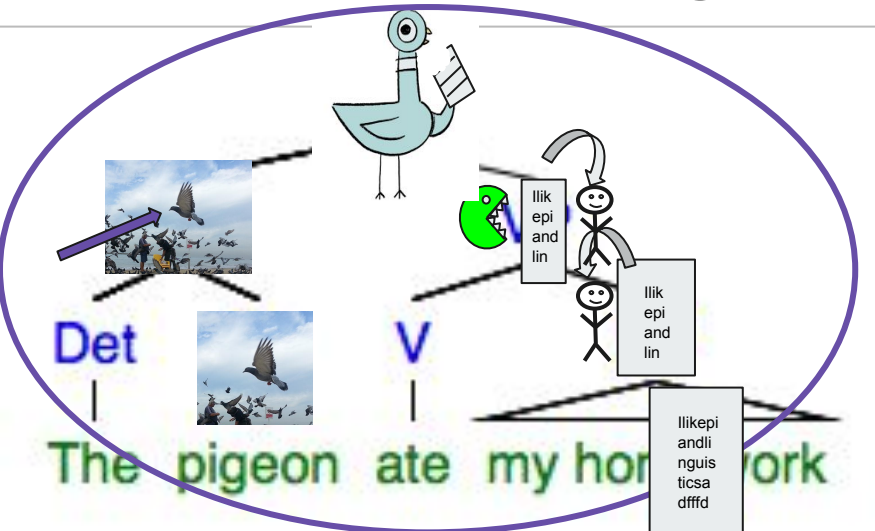


Semantics - Organization Leads to Meaning

- Follow meanings up the tree:



- **Follow meanings up the tree:**



Let's talk Lego instead

PHONOLOGY



MORPHOLOGY



SYNTAX

SEMANTICS



Let's talk Lego instead

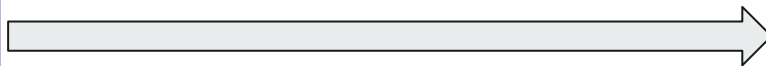
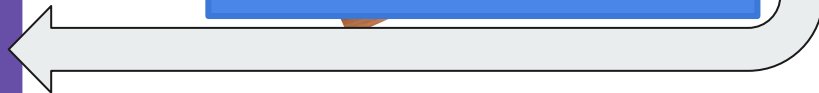
PHONOLOGY

MORPHOLOGY

SYNTAX

SEMANTICS

PRAGMATICS





PRAGMATICS



PRAGMATICS - Context Matters

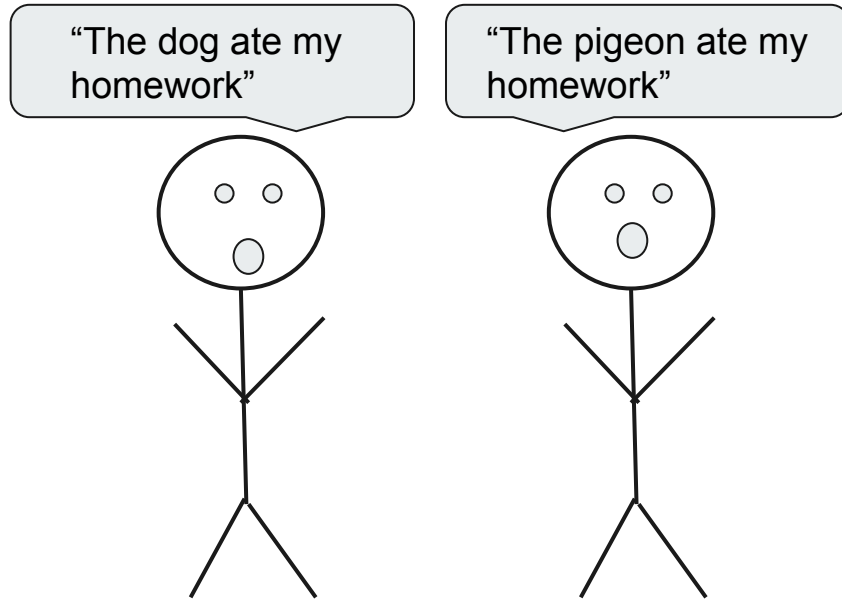


PRAGMATICS - Context Matters

- The same sentence can have different meanings:

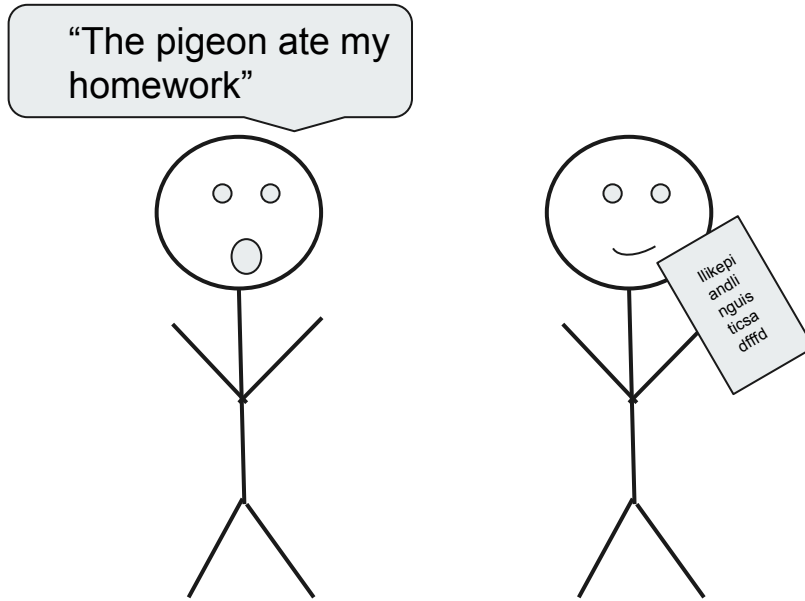
PRAGMATICS - Context Matters

- The same sentence can have different meanings:



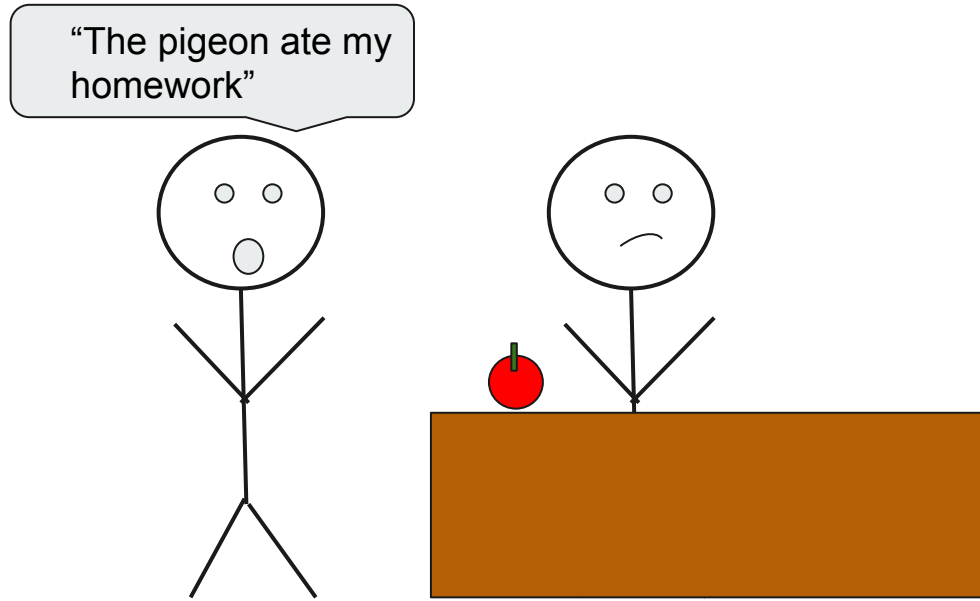
PRAGMATICS - Context Matters

- The same sentence can have different meanings:



PRAGMATICS - Context Matters

- The same sentence can have different meanings:



PRAGMATICS - Context Matters



Let's talk Lego instead

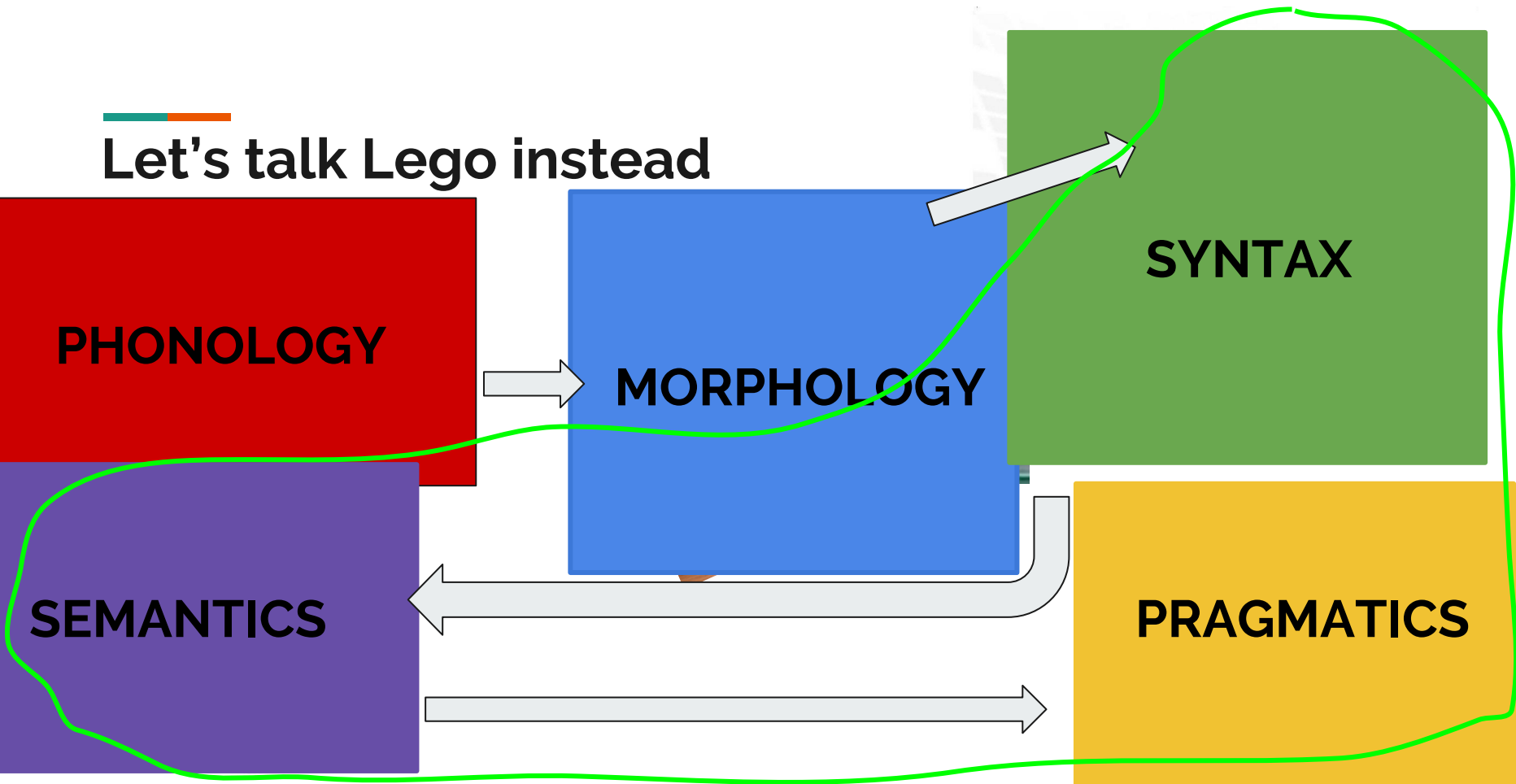
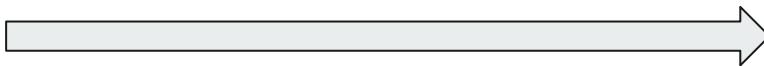
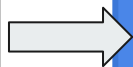
PHONOLOGY

MORPHOLOGY

SYNTAX

SEMANTICS

PRAGMATICS



Discussion Time!



But First


But First - Mind the Penguin!



CHIBIRD CHIBIRD CHIBIRD



And Also



And Also

THERE ARE NO RIGHT ANSWERS!!!!!!!



And Also

THERE ARE NO RIGHT ANSWERS!!!!!!

(Seriously)



OK, Let's go

Syntactic Ambiguities



1. They mentioned the secret village in the forest.
2. The monkey ate the book on the table in the cage.
3. We didn't eat in San Francisco because the restaurants there are expensive.

Crash Blossoms



1. “Violinist Linked to JAL Crash Blossoms”



1. “Violinist Linked to JAL Crash Blossoms”
2. “Gator attacks puzzle experts”



1. “Violinist Linked to JAL Crash Blossoms”
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1. “Violinist Linked to JAL Crash Blossoms”
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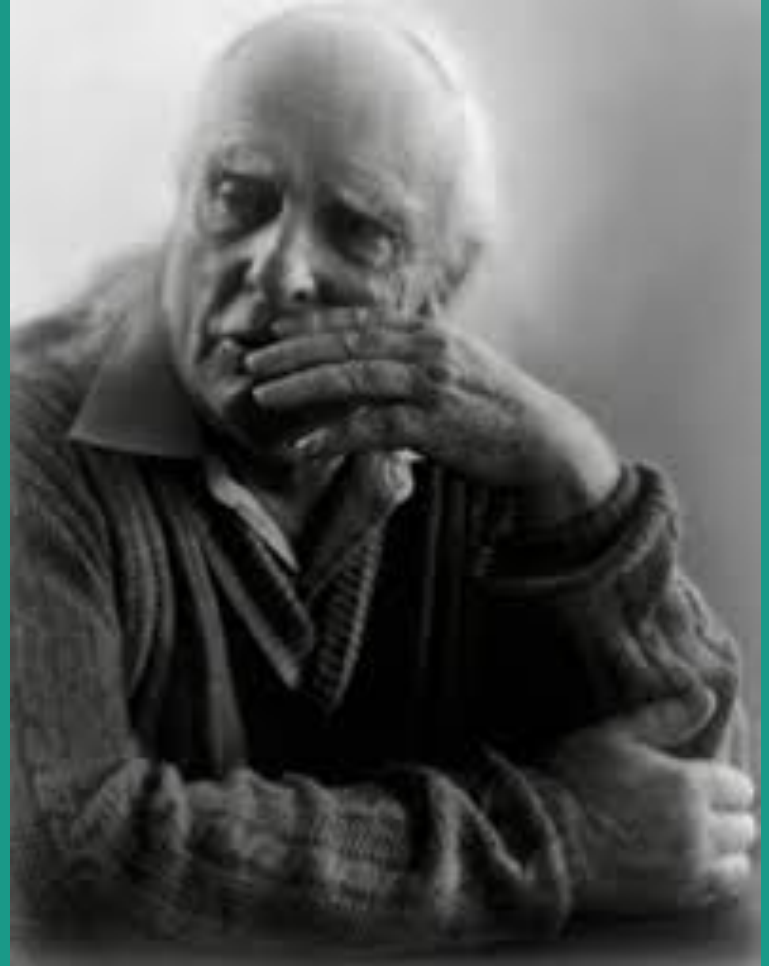
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2. “Gator attacks puzzle experts”
3. “North Carolina Police kill unarmed deaf man using sign language”
4. “Police find jaguars running back asleep inside car sinking into pond”
5. “Eighth Army Push Bottles Up Germans”



1. “McDonald’s Fries the Holy Grail for Potato Farmers”
2. “British Left Waffles on Falklands.”
3. “Squad Helps Dog Bite Victim”
4. “Red Tape Holds Up New Bridge”
5. “Trump Doctor: No heart, cognitive issues found”

Gricean Maxims

Gricean Maxims





How to Converse Cooperatively

- Quality: Say what is true
- Quantity: Say enough to be informative
- Relevance: Don't give unnecessary information
- Manner: "Avoid unnecessary prolixity"



How to Con

- Qual: Say true
 - Qual: Say enough information
 - Relevance: Don't give unnecessary information
 - Manner: Avoid unnecessary
- 



How to Converse Cooperatively - Quality

- “Yeah, well that’s just great”
- “You’ll win a Nobel Prize — in your dreams!”



How to Converse Cooperatively - Quality

When is it ok to not tell the literal truth?



How to Converse Cooperatively - Quality

When is it ok to not tell the literal truth?

- “Yeah, well that’s just great”
- “You’ll win a Nobel Prize — in your dreams!”



How to Converse Cooperatively - Quantity



How to Converse Cooperatively - Quantity

A: “Do you know the time?”



How to Converse Cooperatively - Quantity

A: “Do you know the time?”

B: “Yes.”



How to Converse Cooperatively - Quantity

A: “Do you know the time?”

B: “Yes.”

Is this ever an ok response? When or why not?



How to Converse Cooperatively - Relevance



How to Converse Cooperatively - Relevance

Police: “Have you seen the criminal”

B: “Yes. He went that way. My brother is having a BBQ tomorrow”



How to Converse Cooperatively - Relevance

Police: “Have you seen the criminal”

B: “Yes. He went that way. My brother is having a BBQ tomorrow”

What’s wrong with this?



How to Converse Cooperatively - Manner

“The opera singer produced a series of sounds closely corresponding closely with the notes of the aria”



How to Converse Cooperatively - Manner

“The opera singer produced a series of sounds closely corresponding closely with the notes of the aria”

What does this say about the opera singer?

Irony and Sarcasm



1. The movie was so good!
2. The movie was soooooo good.
3. The movie was so good. □



1. The movie was so good!
2. The movie was soooooo good.
3. The movie was so good. □

How are these different? Why does this work?

Classification of Adjectives



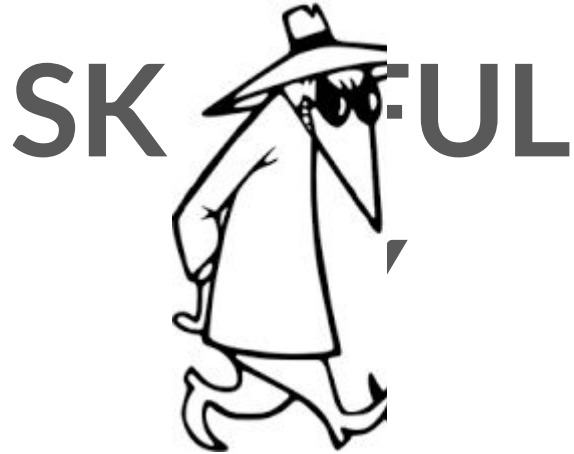
Types of Adjectives

**SKILLFUL
SPY**

VS.

**FAKE
SPY**

Types of Adjectives



VS.

FAKE
SPY

Types of Adjectives



vs.





Types of Adjectives



vs.





Types of Adjectives

**SKILLFUL
SPY**

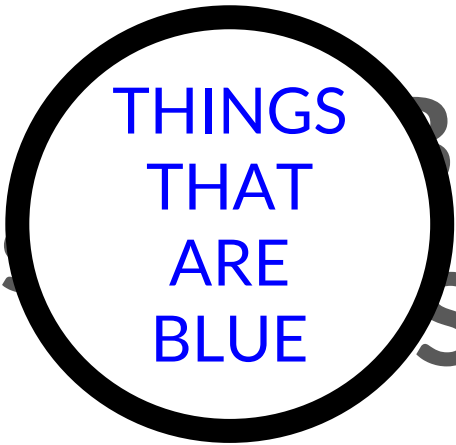
VS.

**BLUE
SPY**



Types of Adjectives

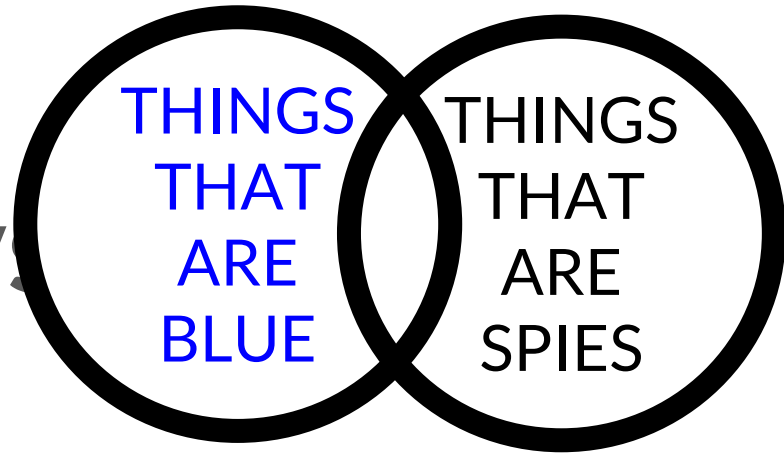
SKILLFUL
SPY

vs.  THINGS
THAT
ARE
BLUE
BLUE
SPY

Types of Adjectives

SKILLFUL
SPY

vs.



Types of Adjectives

SKILLFUL
SPY

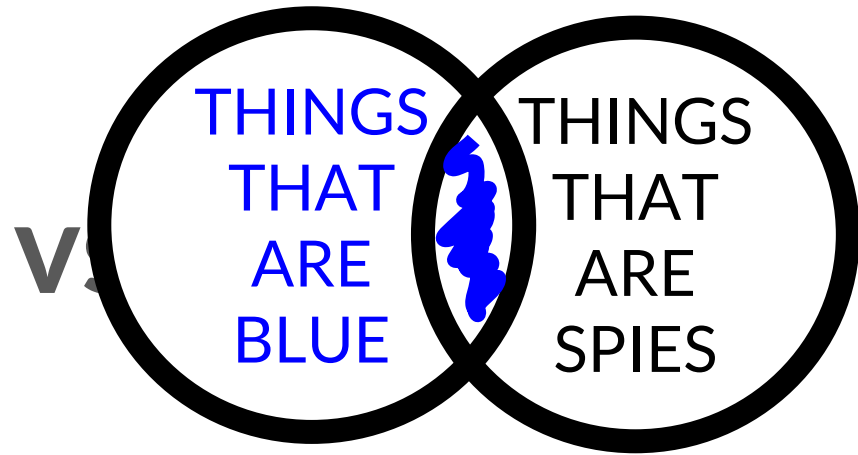


BLUE SPIES = Things that are BLUE and SPIES



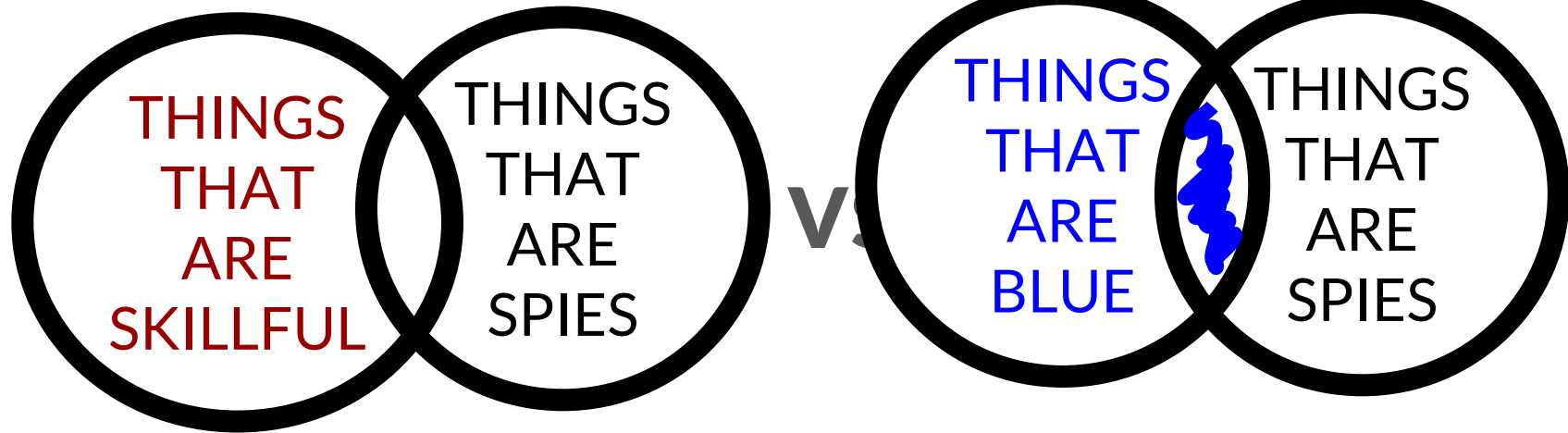


Types of Adjectives

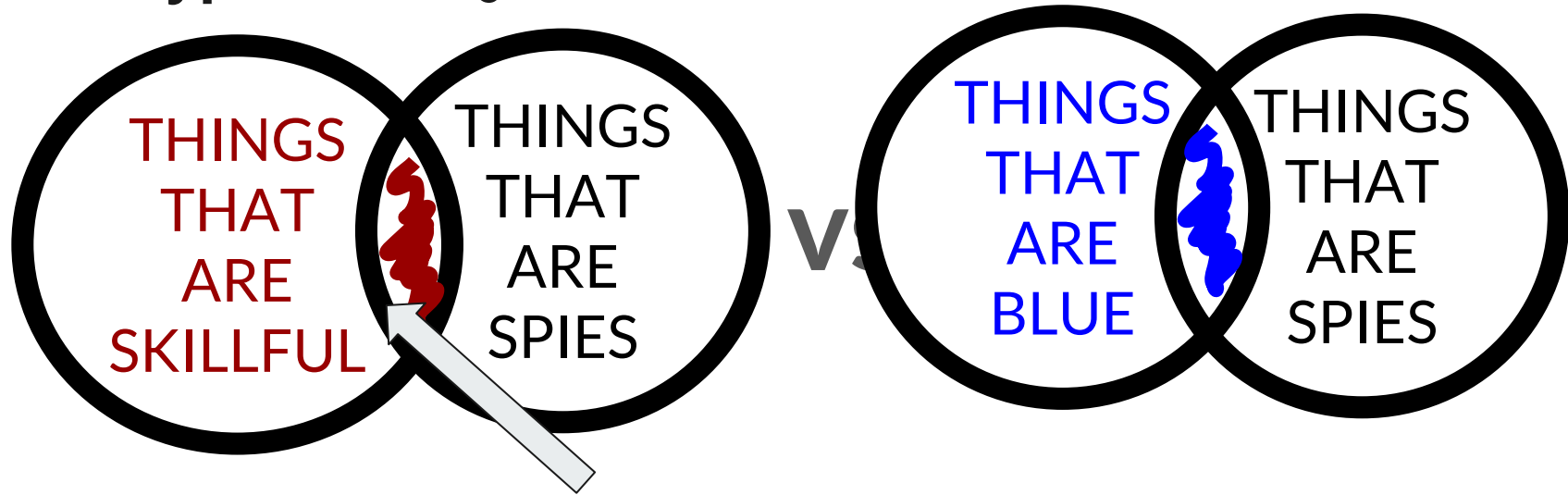




Types of Adjectives

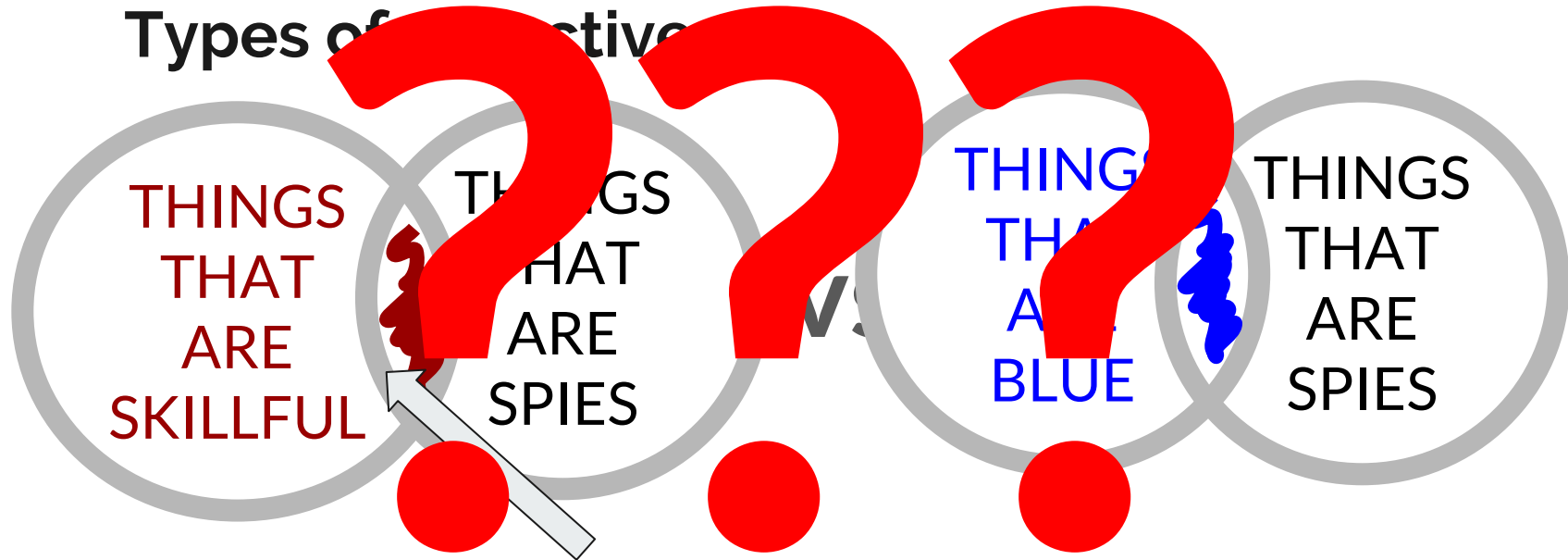


Types of Adjectives



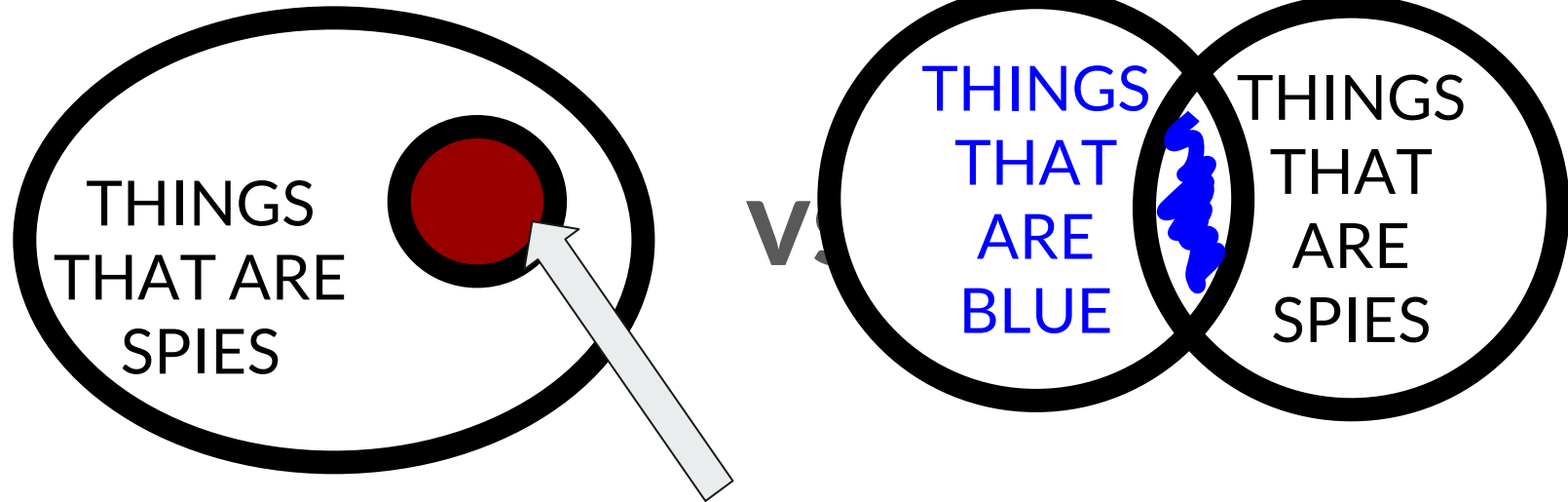
SKILLFUL SPIES = Things that are **SKILLFUL** and SPIES ?

Types of Set



SKILLFUL SPIES = Things that are **SKILLFUL** and SPIES

Types of Adjectives



SKILLFUL SPIES = SPIES that are **SKILLFUL**



Types of Adjectives

ALLEGED
SPY???



Types of Adjectives

**LARGE
LION**

vs.

**STONE
LION**



Types of Adjectives

FAKE vs. **TOY** vs. **WATER**
GUN **GUN** **GUN**



Types of Adjectives

- Intersective (ex: Blue)
 - Subsective (ex: Skillful)
-
- Nonsubsective (ex: Alleged)
 - Privative (ex: Fake?)



Intersective



BLUE SPIES = Things that are **BLUE** and SPIES



Subsective



SKILLFUL SPIES = SPIES that are **SKILLFUL**



Nonsubsective



THINGS
THAT ARE
SPIES

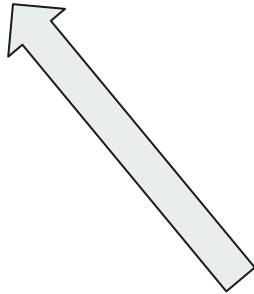
ALLEGED SPIES = Things that **MIGHT** be SPIES



Privative



THINGS
THAT ARE
SPIES



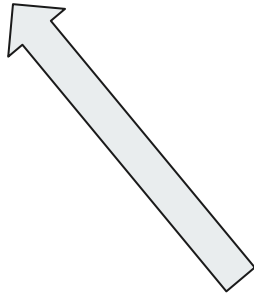
FAKE SPIES = Things that are **NOT** SPIES



Privative



THINGS
THAT ARE
SPIES



FAKE SPIES = Things that are **NOT** SPIES (probably)

Presuppositions



Mind the presup...

- “Do you want to go swimming? We do, too.”
- “Have you done your homework yet?”
- “Did you know your home is at risk?”



Mind the *different* presups...

- “My dog ate my homework.”
- “My aardvark ate my homework.”
- “My dad ate my homework.”

Speech Acts



Types of Sentences

- Declarative — Statements



Types of Sentences

- Declarative — Statements
- Interrogative — Questions



Types of Sentences

- Declarative — Statements
- Interrogative — Questions
- Imperative — Commands



Types of Sentences - Declarative

- I am a pigeon.
- I hope you have a good time.
- I was wondering if you might be able to do me a favor.



Types of Sentences - Interrogative

- Can you pass me the salt?
- Do you want to get ice cream?
- Would you mind doing me a favor?



Types of Sentences - Imperative

- Do your homework!
- Get well soon!
- Please rain today!

A Closing Note: Cheeseburgers



German:

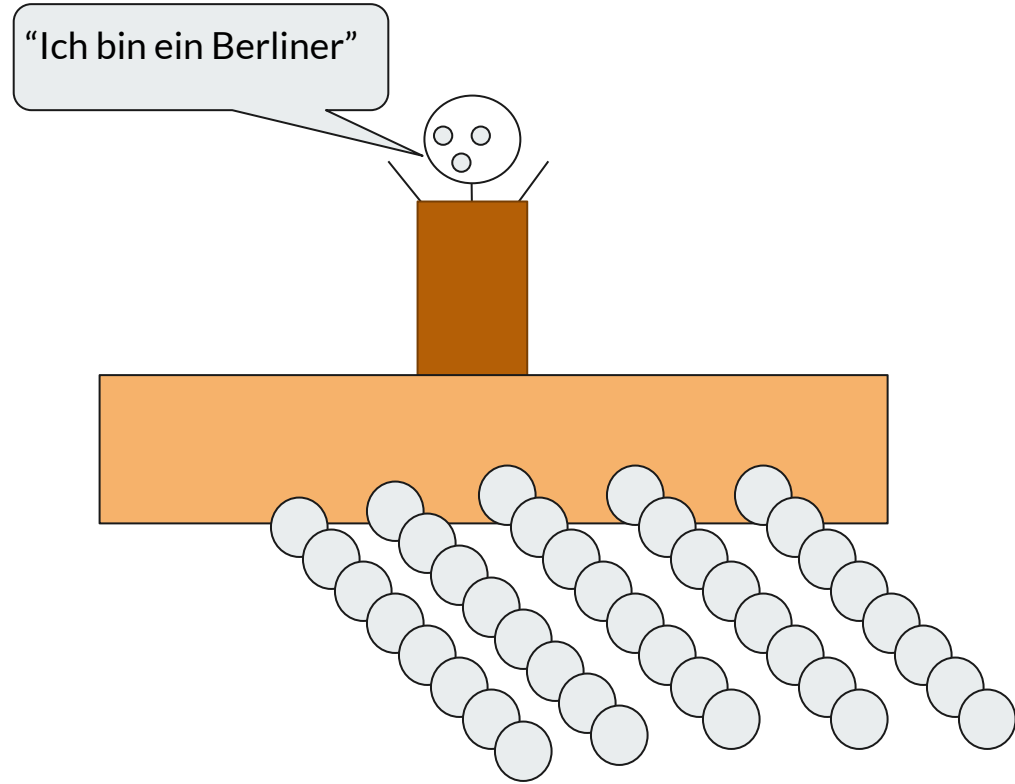


German:

“-er” = Sandwich from

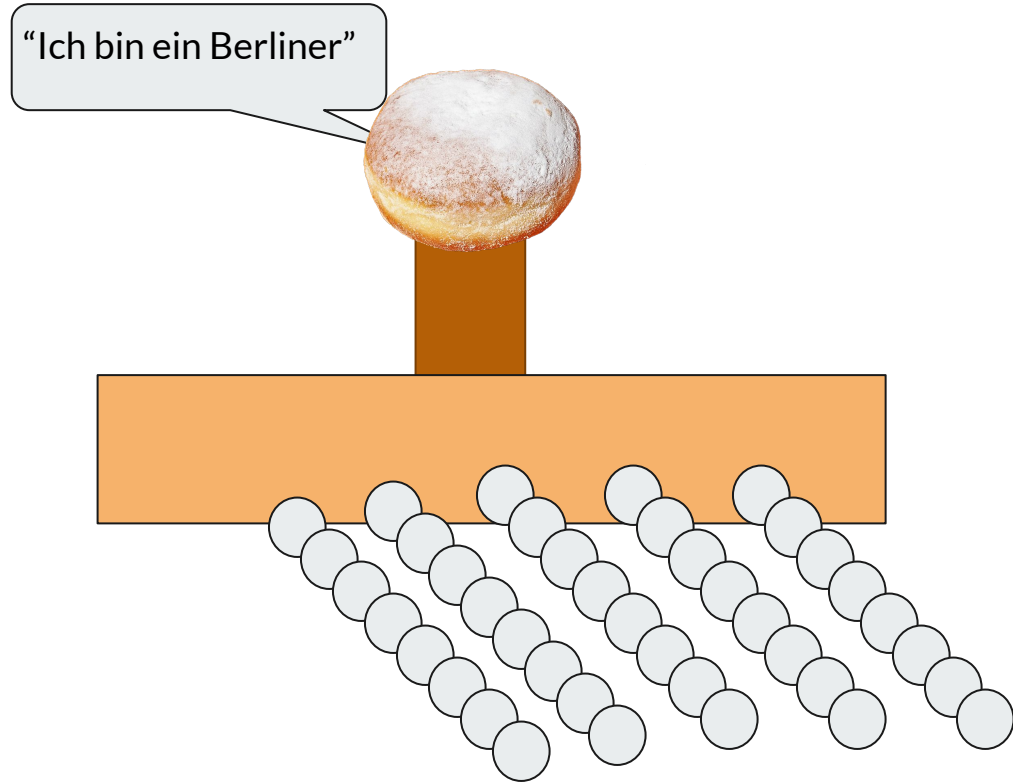

German:

“-er” = Sandwich from




German:

“-er” = Sandwich from





German: “Berliner” =

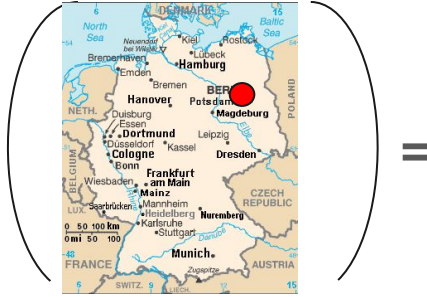


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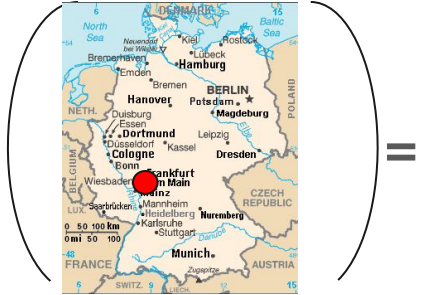
German: “Berliner” =



=



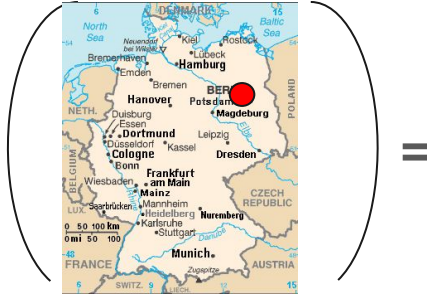
“Frankfurter” =



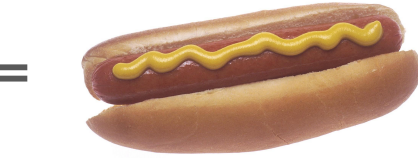
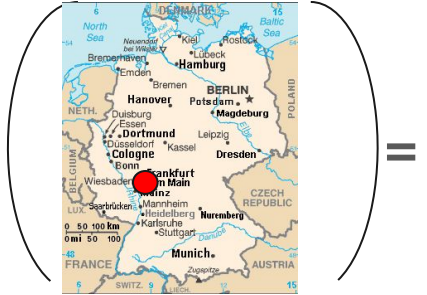
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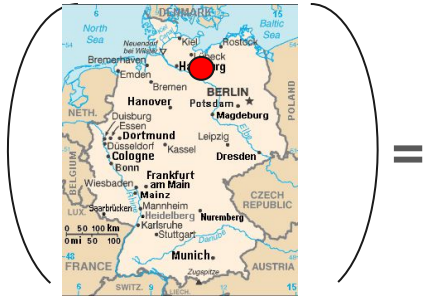
 German: “Berliner” =



“Frankfurter” =



“Hamburger” =



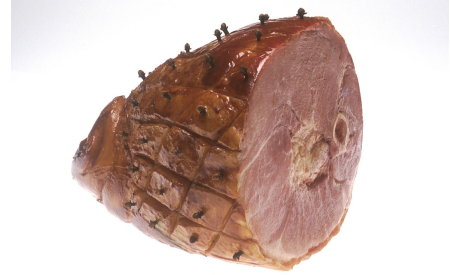
English:



“ham” = MEAT

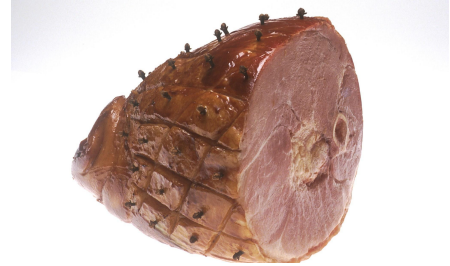
English:

“**ham**” = MEAT



English:

“ham” = MEAT

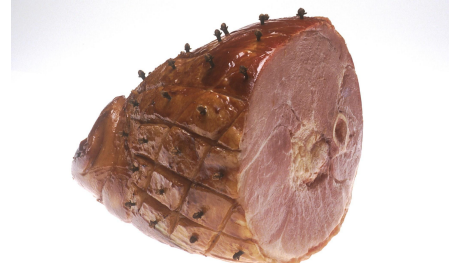


ham-burger = MEAT-burger



English:

“ham” = MEAT

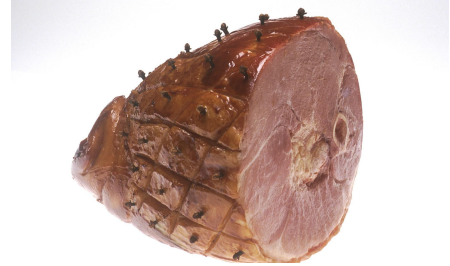


ham-burger = MEAT-burger



English:

“ham” = MEAT



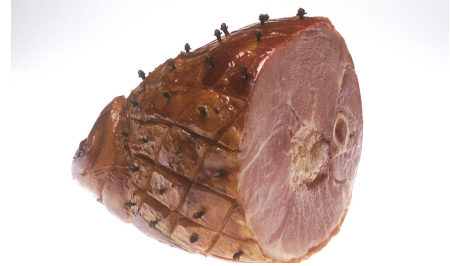
ham-burger = MEAT-burger



“burger” = type of sandwich
(type of burger goes before)

English:

“ham” = MEAT



ham-burger = MEAT-burger

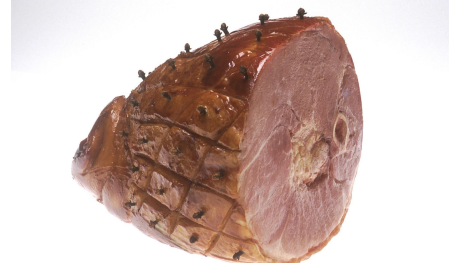


“burger” = type of sandwich
(type of burger goes before)

cheeseburger = “type of sandwich” with cheese

English:

“ham” = MEAT



ham-burger = MEAT-burger



“burger” = type of sandwich
(type of burger goes before)

cheeseburger = “type of sandwich” with cheese



English: cheeseburger =





English: cheeseburger =



German: cheeseburger =



???



Wait



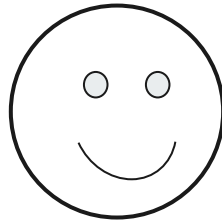
Wait

It Gets Better...



Wait

It Gets Better...



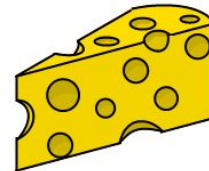
Portuguese: “X” = “xis”



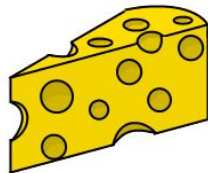
Portuguese:



“**X**” = “xis” sounds like



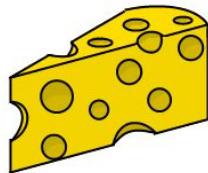
Portuguese: “X” = “xis” sounds like



Cheeseburger = X-burger



Portuguese: “X” = “xis” sounds like

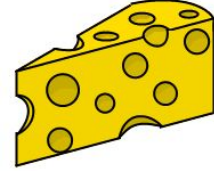


Cheeseburger = X-burger



(type of thing goes *after*)

Portuguese: “X” = “xis” sounds like



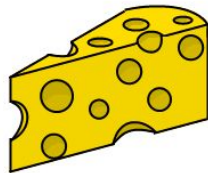
Cheeseburger = X-burger



(type of thing goes *after*)

Baconburger

Portuguese: “X” = “xis” sounds like



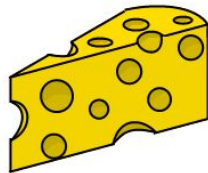
Cheeseburger = X-burger



(type of thing goes *after*)

Baconburger = X-bacon

Portuguese: “X” = “xis” sounds like



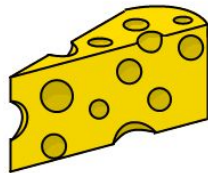
Cheeseburger = X-burger



(type of thing goes *after*)

Baconburger = X-bacon
“Everything”burger

Portuguese: “X” = “xis” sounds like



Cheeseburger = X-burger

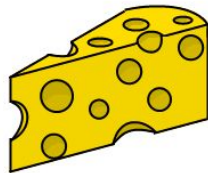


(type of thing goes *after*)

Baconburger = X-bacon

“Everything”burger = X-tudo

Portuguese: “X” = “xis” sounds like



Cheeseburger = X-burger



(type of thing goes *after*)

Baconburger = X-bacon



“Everything”burger = X-tudo



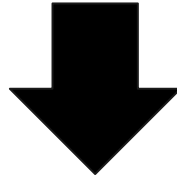


German: hamburger =





German: hamburger =



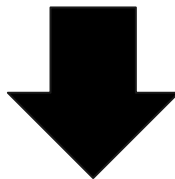
Portuguese: X-tudo =





German: hamburger =

???



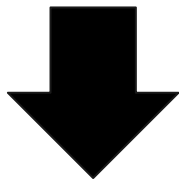
Portuguese: X-tudo =





German: hamburger =

???



Portuguese: X-tudo =





German:

hamburger

???

Portuguese:





German

Portuguese



Ger

Port





And with that...

Lunchtime!!!