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DIG

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**THE MYSTERY OF ASPECTUAL RELATIONS:  
HOW CLOSE TO SUCCESSFUL  
IMPLEMENTATION?**

# CONTENTS

- ▶ Introduction
- ▶ Parsimony
- ▶ Presenting our model
- ▶ Results
- ▶ Conclusion



# INTRODUCTION

# INTRODUCTION



I Tried Drinking Chlorophyll Water for a Week And Here's What Happened



Gaby Verdolini | Updated: May 12, 2021



# INTRODUCTION

*I tried drinking chlorophyll water for a week.*



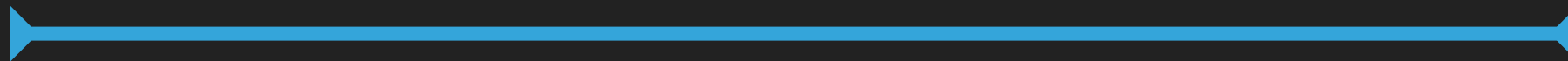
DRINK



Week = 168h

# INTRODUCTION

*I tried drinking chlorophyll  
water [every day]  
for a week.*



Week = 168h

# INTRODUCTION

## ASPECT

*“different ways of viewing the internal temporal constituency of a situation”*

Bernard Comrie  
(based on Jens Holt)

- ▶ Is it ongoing ?
- ▶ Is it over ?
- ▶ Is it repeated ?
- ▶ Is it included in another situation ?

# INTRODUCTION

*I slept for an hour.*

SLEEP

1h

*I slept (well) yesterday.*

SLEEP

Yesterday

- ▶ Same verb
- ▶ Same tense
- ▶ Different interpretations



# INTRODUCTION

*I will sleep for an hour.*

SLEEP

1h

*I will sleep in an hour.*

SLEEP

1h

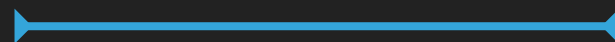
- ▶ Same verb
- ▶ Same tense
- ▶ Same duration
- ▶ Different interpretations

# INTRODUCTION

*In August, I will sleep more.*

SLEEP

August



1h

SLEEP

SLEEP

- ▶ Same preposition
- ▶ Different interpretations

# INTRODUCTION

To summarise :

- ▶ Aspect is a complex procedure :
  - ▶ Various interpretations
  - ▶ Few explicit markers
- ▶ Yet there is evidence of a simpler underlying structure :
  - ▶ Unconscious processing for a native speaker...
  - ▶ ...even for children

# INTRODUCTION

Français ▾ ↔ Anglais ▾

je vais manger **en** une minute ×

🔊

i will eat in a minute

🔊 📄 🗑️

Anglais ▾ ↔ Français ▾

i will eat in a minute ×

🔊

je vais manger **dans** une minute

🔊 📄 🗑️



**PARSIMONY**

# PARSIMONY

## PARSIMONY

```
graph TD; A[PARSIMONY] --> B[Limit the number of attributes]; A --> C[No recursive structures]; A --> D[Limit the number of operations]; B --> E[Limit the number of values per attribute]; D --> F[Limit the complexity of the instructions];
```

Limit the number  
of attributes

No "recursive"  
structures

Limit the number  
of operations

Limit the number of  
values per attribute

Limit the complexity  
of the instructions

# PRESENTING OUR MODEL

## PRESENTING OUR MODEL

STARTING WITH A SENTENCE...

*She slept during the show.*



# PRESENTING OUR MODEL

## STARTING WITH A SENTENCE...

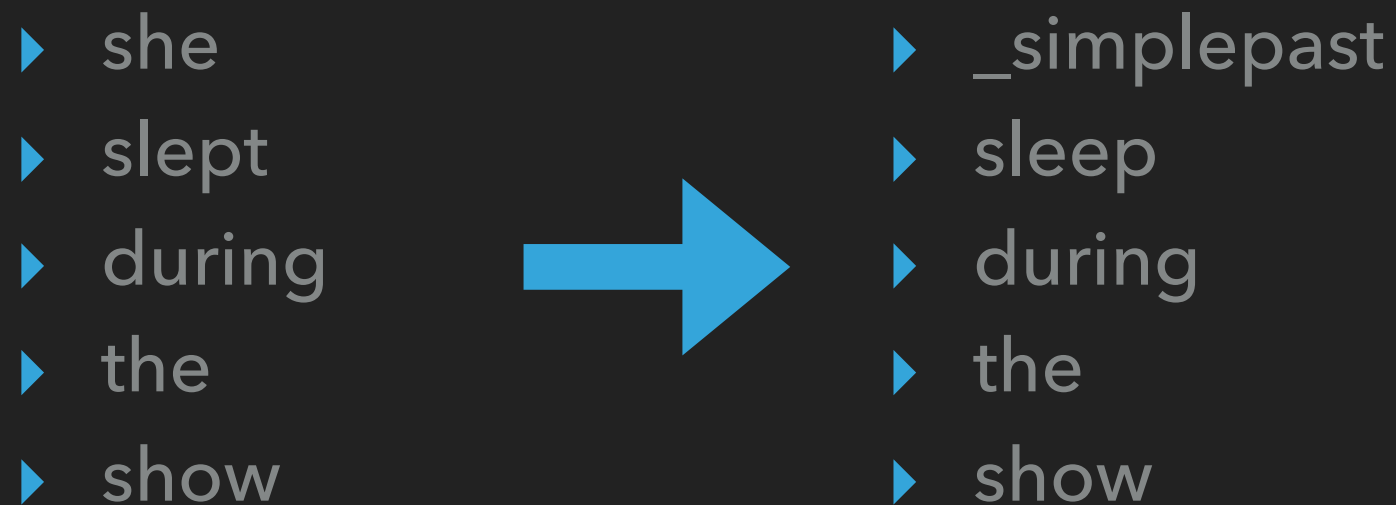
*She slept during the show.*

- ▶ she
- ▶ slept
- ▶ during
- ▶ the
- ▶ show

# PRESENTING OUR MODEL

## STARTING WITH A SENTENCE...

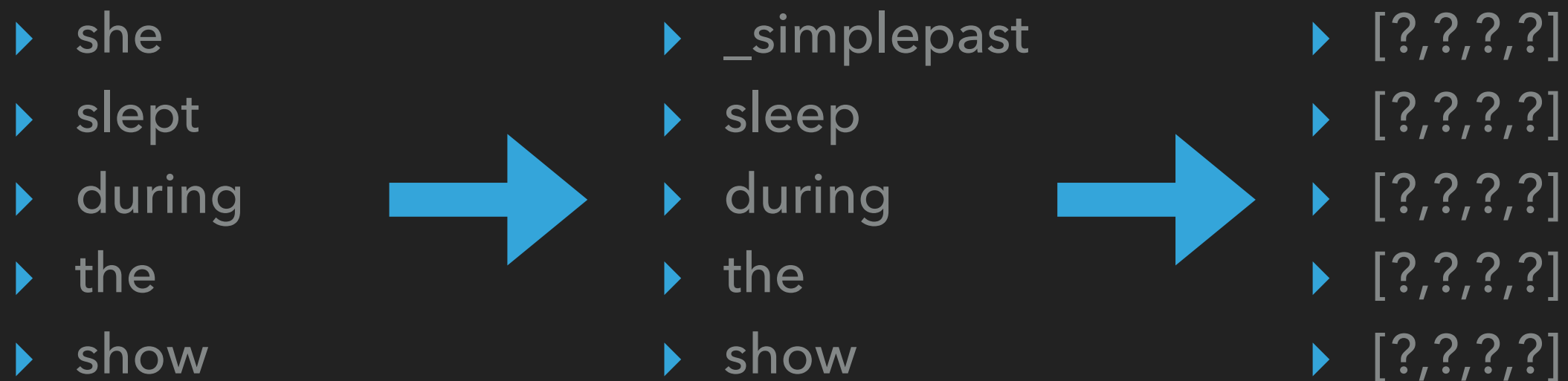
*She slept during the show.*



# PRESENTING OUR MODEL

## STARTING WITH A SENTENCE...

*She slept during the show.*



# PRESENTING OUR MODEL

## AIS (ASPECTUAL INFORMATION STRUCTURE)

Attribute	Possible values
Viewpoint	State / Event / _
Multiplicity	Singular / Multiplied / _
Anchoring	Anchored / _
R-System	Change in reference / _ (TBC)
Image	(TBC)
Duration	[a, b] / Nil / _



## PRESENTING OUR MODEL

AIS : VIEWPOINT

*He was leaving the house  
when one of his guests called him.*

STATE



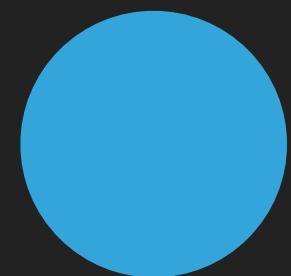
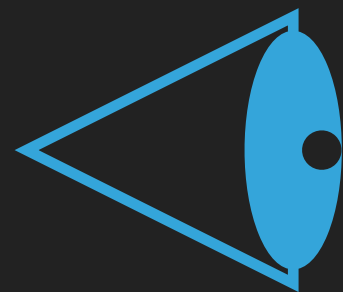
Leave the house

## PRESENTING OUR MODEL

AIS : VIEWPOINT

*He left the house at 12 o'clock.*

EVENT



Leave the house

## PRESENTING OUR MODEL

AIS : VIEWPOINT

*He read that book yesterday.*

EVENT

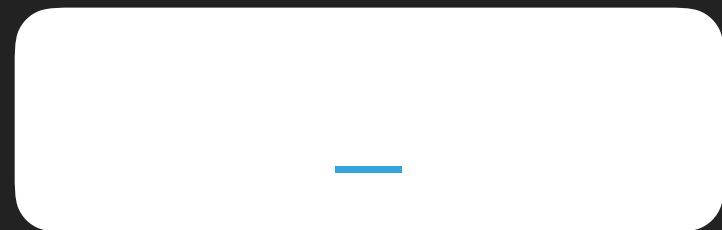
*While he was reading it, the postman came.*

STATE

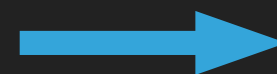
# PRESENTING OUR MODEL

AIS : ANCHORING

*She slept 30 minutes yesterday.*



30 minutes



Yesterday

# PRESENTING OUR MODEL

AIS : ANCHORING

*She slept at 8 o'clock yesterday.*

**ANCHORED**



Yesterday

8 o'clock

# PRESENTING OUR MODEL

## AIS : EXAMPLES

	Viewpoint	Multiplicity	Anchoring	R-System
<i>during [...]</i>	State	—	—	—
<i>in [...]</i>	Event	—	—	—
<i>the show</i>	—	Singular	Anchored	—
<i>eat cake</i>	State	—	—	—

## PRESENTING OUR MODEL

BACK TO THE SENTENCE...

*She slept during the show.*

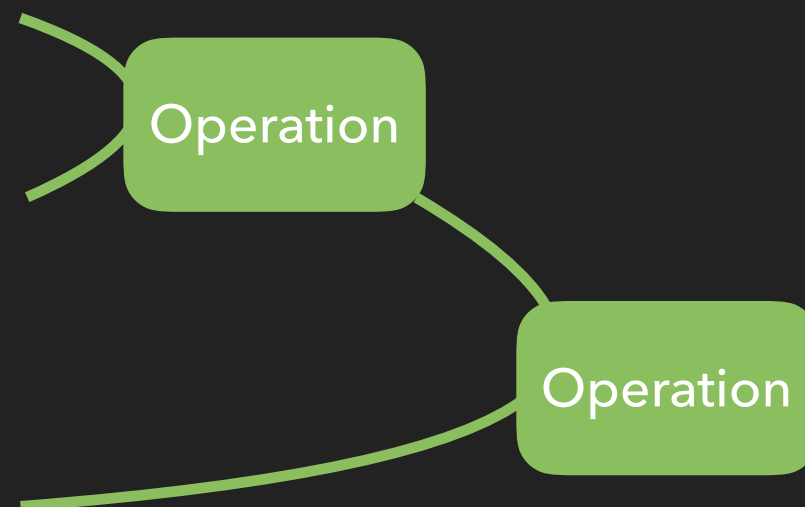
- ▶ [g,\_,\_,\_]
- ▶ [\_,\_,\_,\_]
- ▶ [g,\_,\_,\_]
- ▶ [\_,s,a,\_]
- ▶ [\_,\_,\_,\_]

# PRESENTING OUR MODEL

BACK TO THE SENTENCE...

*She slept during the show.*

- ▶ [g,\_,\_,\_]
- ▶ [\_,\_,\_,\_]
- ▶ [g,\_,\_,\_]
- ▶ [\_,s,a,\_]
- ▶ [\_,\_,\_,\_]



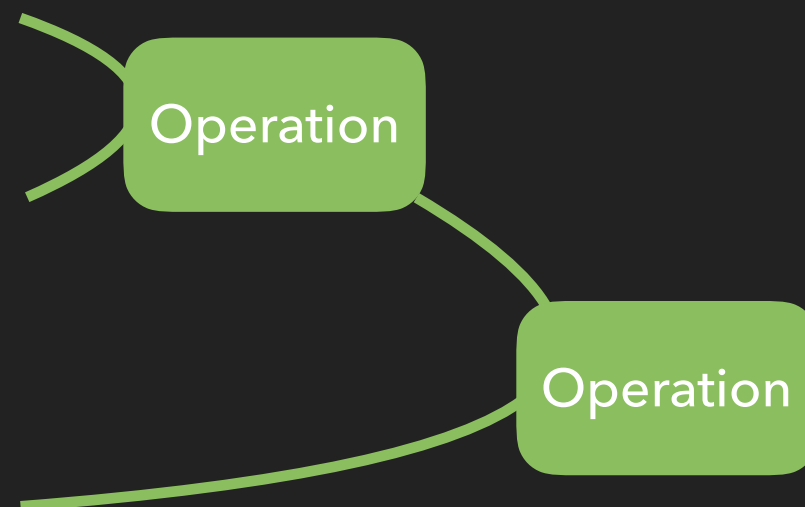


# PRESENTING OUR MODEL

BACK TO THE SENTENCE...

*She slept during the show.*

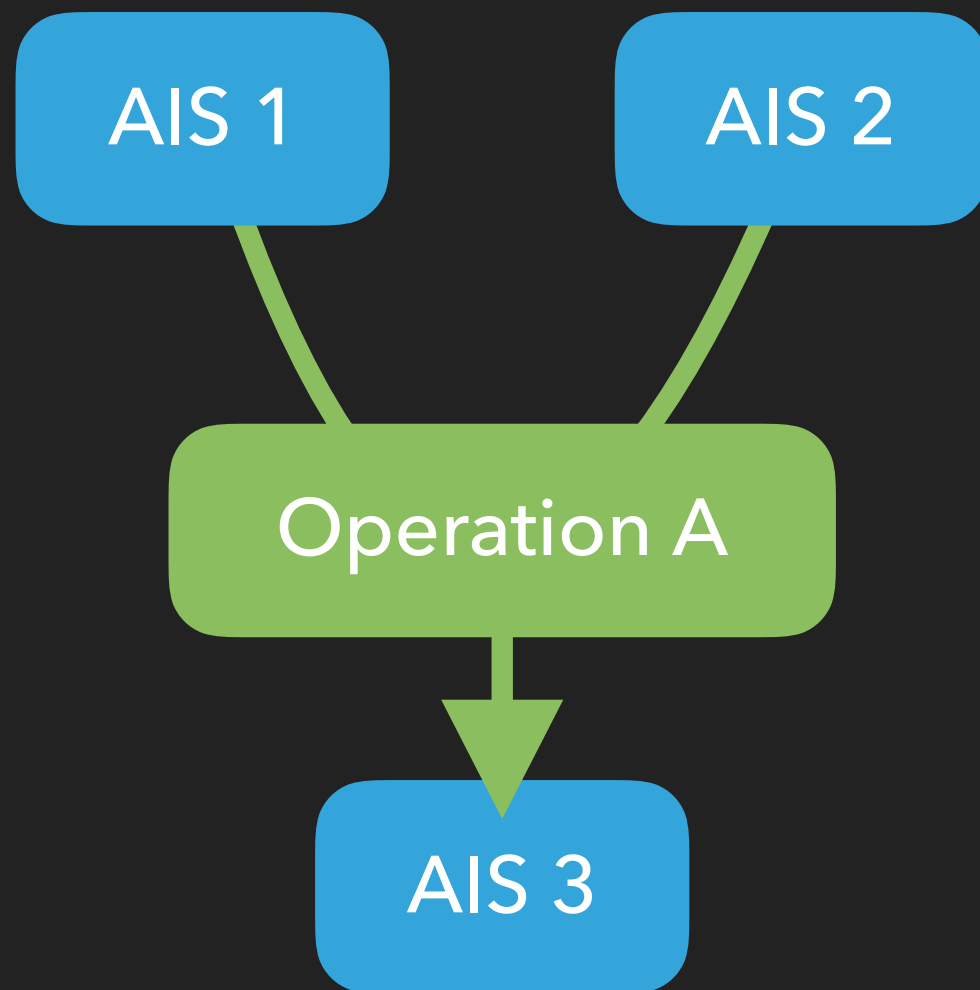
- ▶ [g,\_,\_,\_]
- ▶ [\_,\_,\_,\_]
- ▶ [g,\_,\_,\_]
- ▶ [\_,s,a,\_]
- ▶ [\_,\_,\_,\_]



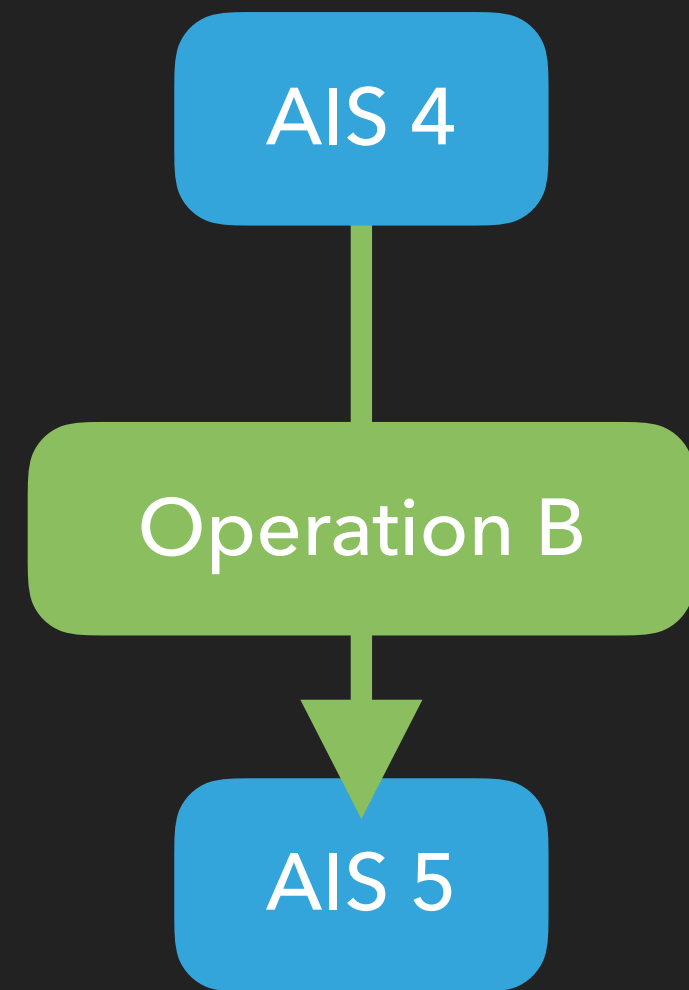
▶ [?,?,?,?]

# PRESENTING OUR MODEL

## OPERATIONS



(AIS 1 and AIS 2  
syntactically compatible)



# PRESENTING OUR MODEL

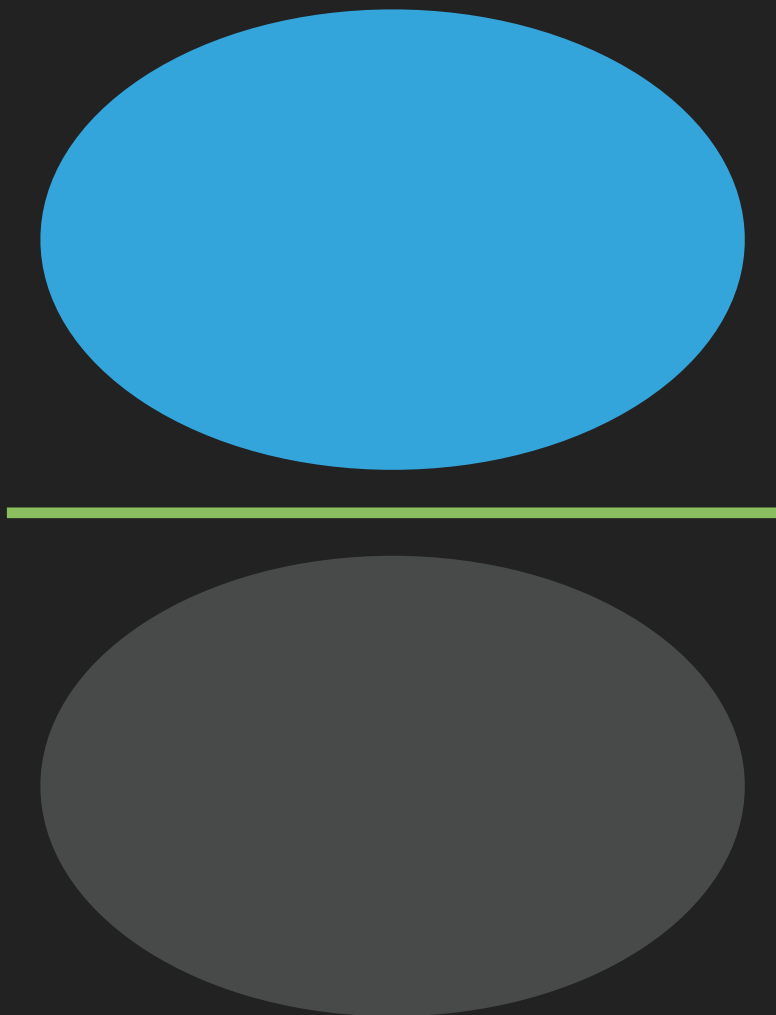
## OPERATIONS

Operation	Type
Merge	Binary
Separation	Binary
Simultaneity	Binary
Inclusion	Binary
Repetition	Unary
Predication	Unary

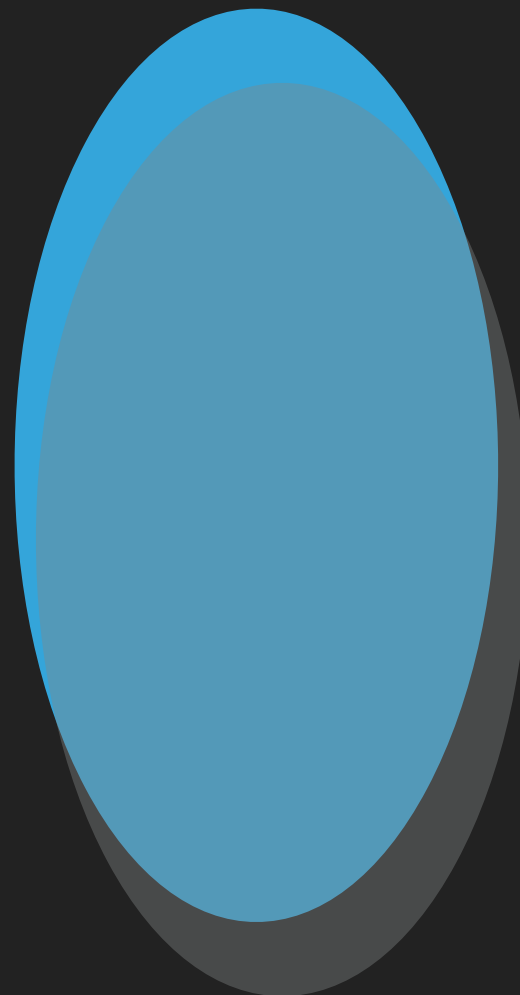
# PRESENTING OUR MODEL

## OPERATIONS : (TOPOLOGICAL) MAPS

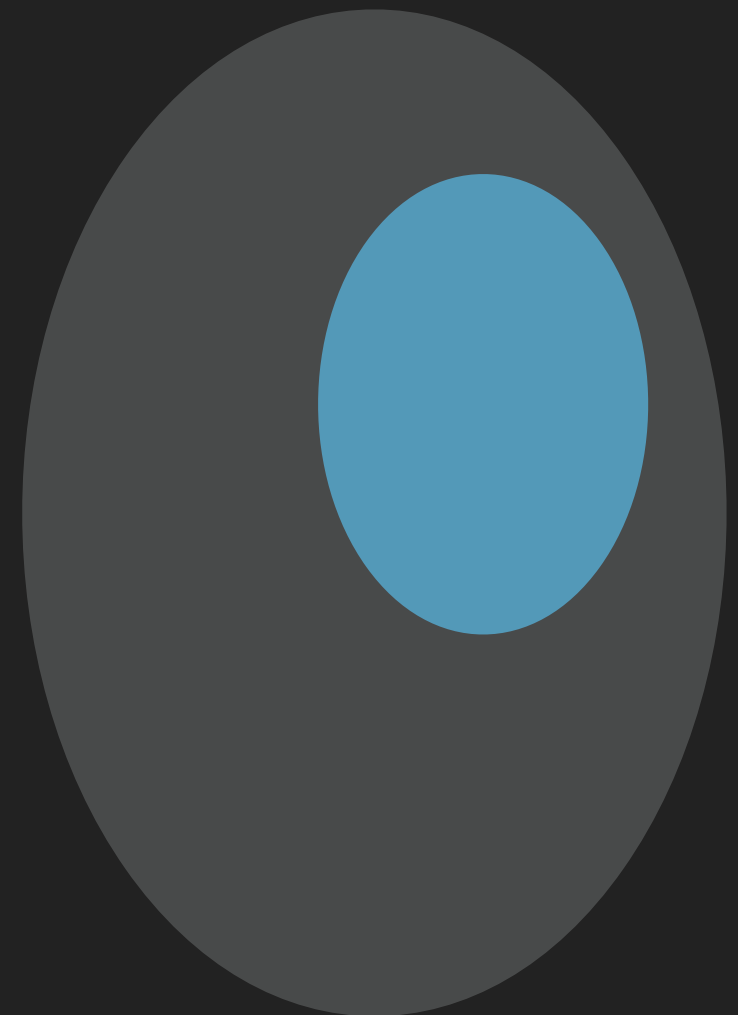
Separation



Simultaneity



Inclusion

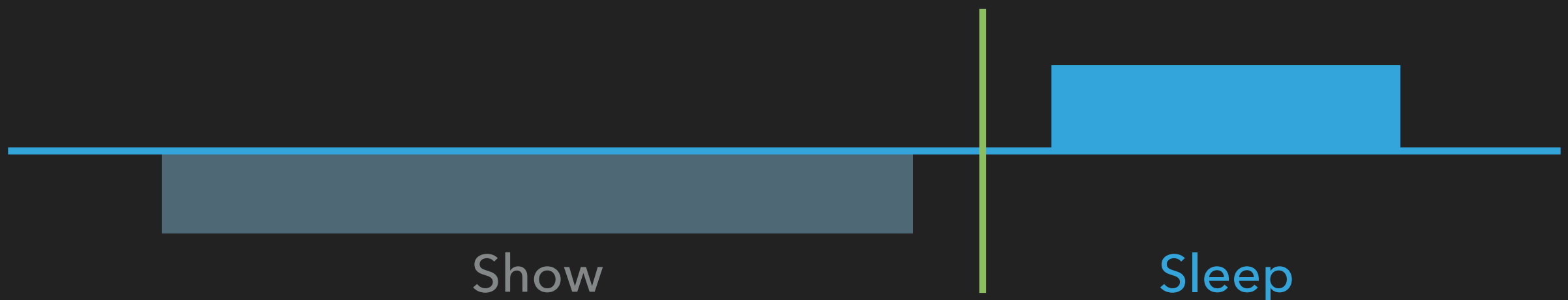


## PRESENTING OUR MODEL

OPERATIONS : MAPS : SEPARATION

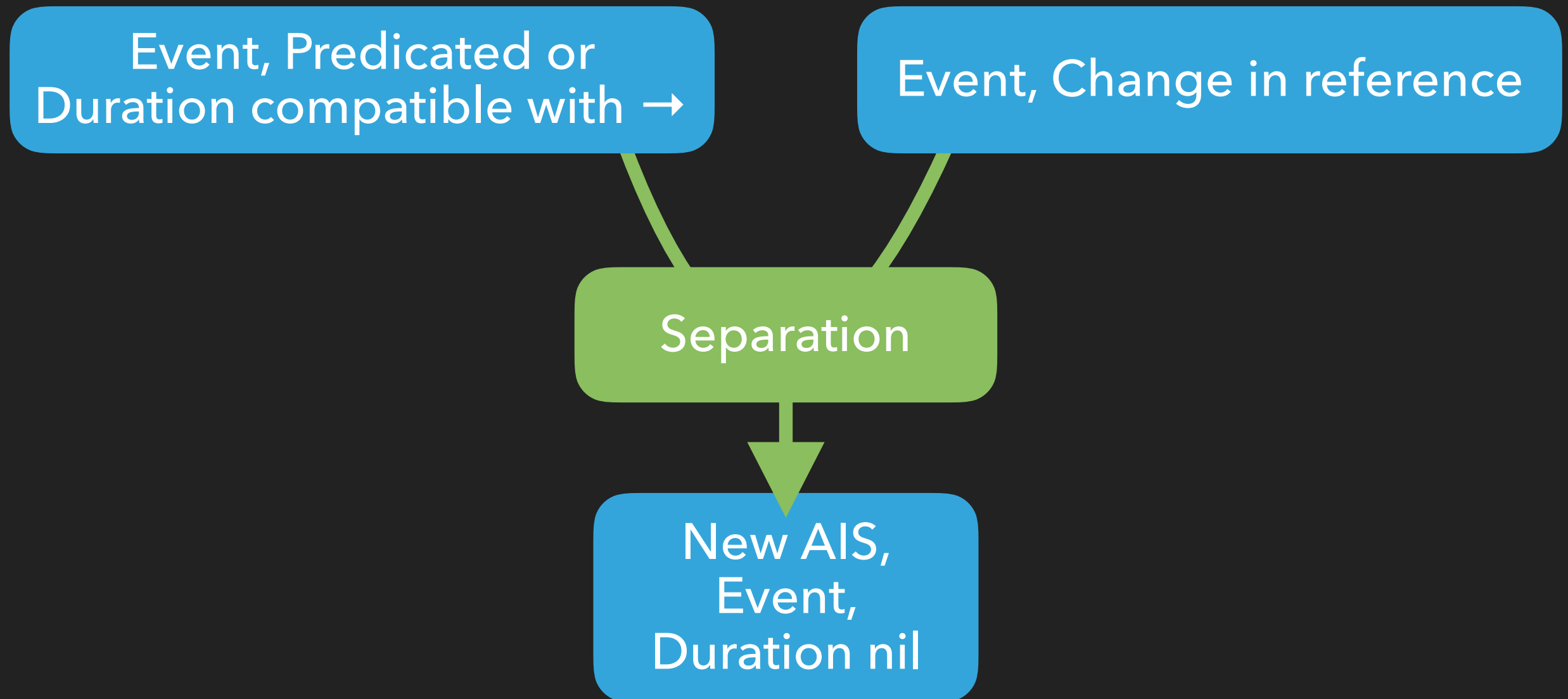
*She slept after the show.*

Separation



# PRESENTING OUR MODEL

OPERATIONS : MAPS : SEPARATION



## PRESENTING OUR MODEL

OPERATIONS : MAPS : SIMULTANEITY

*She slept for 30 minutes.*

Simultaneity

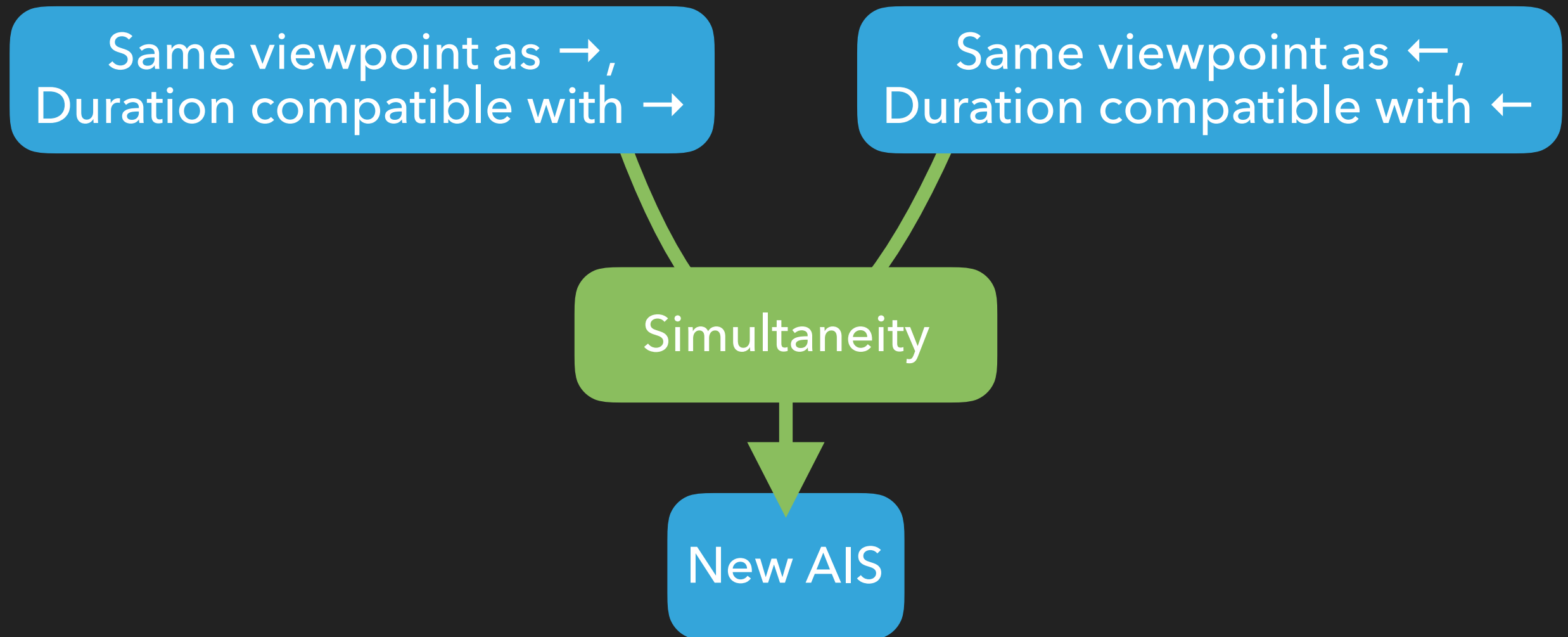
Sleep

30 minutes



# PRESENTING OUR MODEL

OPERATIONS : MAPS : SIMULTANEITY





## PRESENTING OUR MODEL

OPERATIONS : MAPS : INCLUSION

*She ate a cake during the show.*

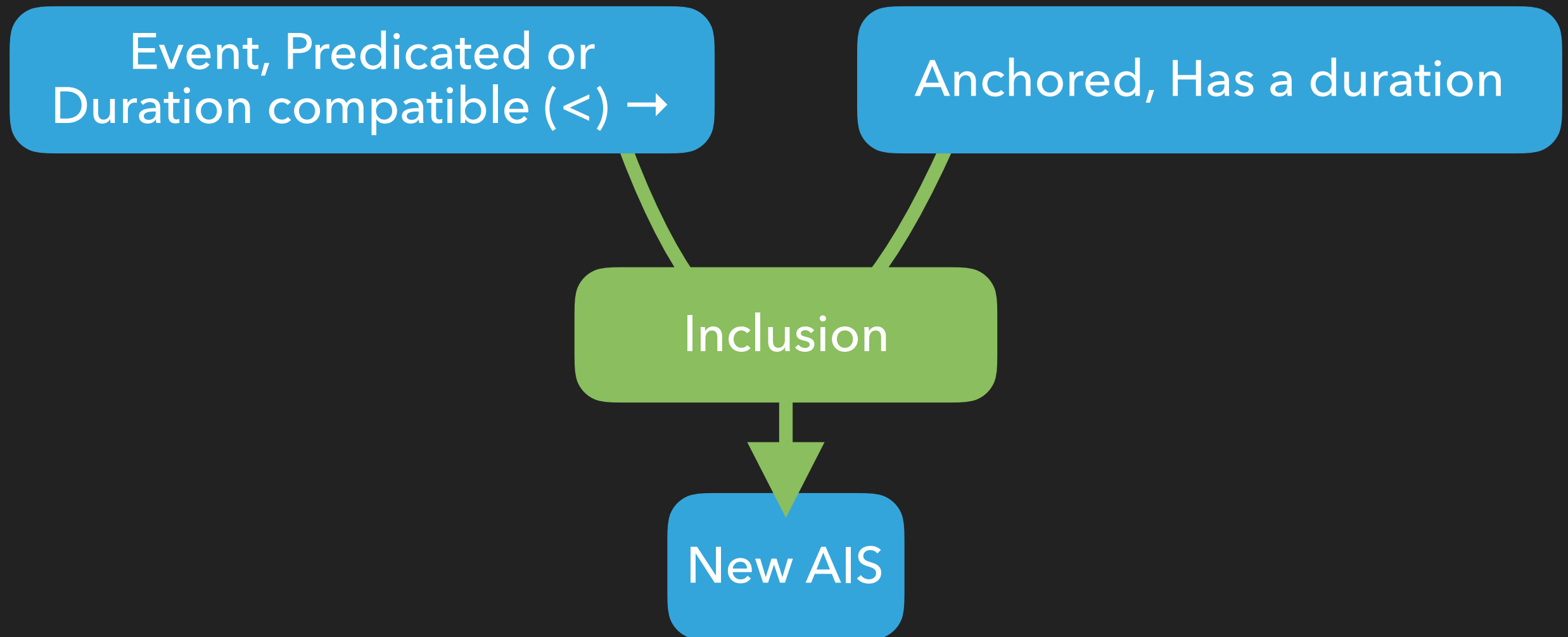
Inclusion

Eat a cake

Show

# PRESENTING OUR MODEL

OPERATIONS : MAPS : INCLUSION



# PRESENTING OUR MODEL

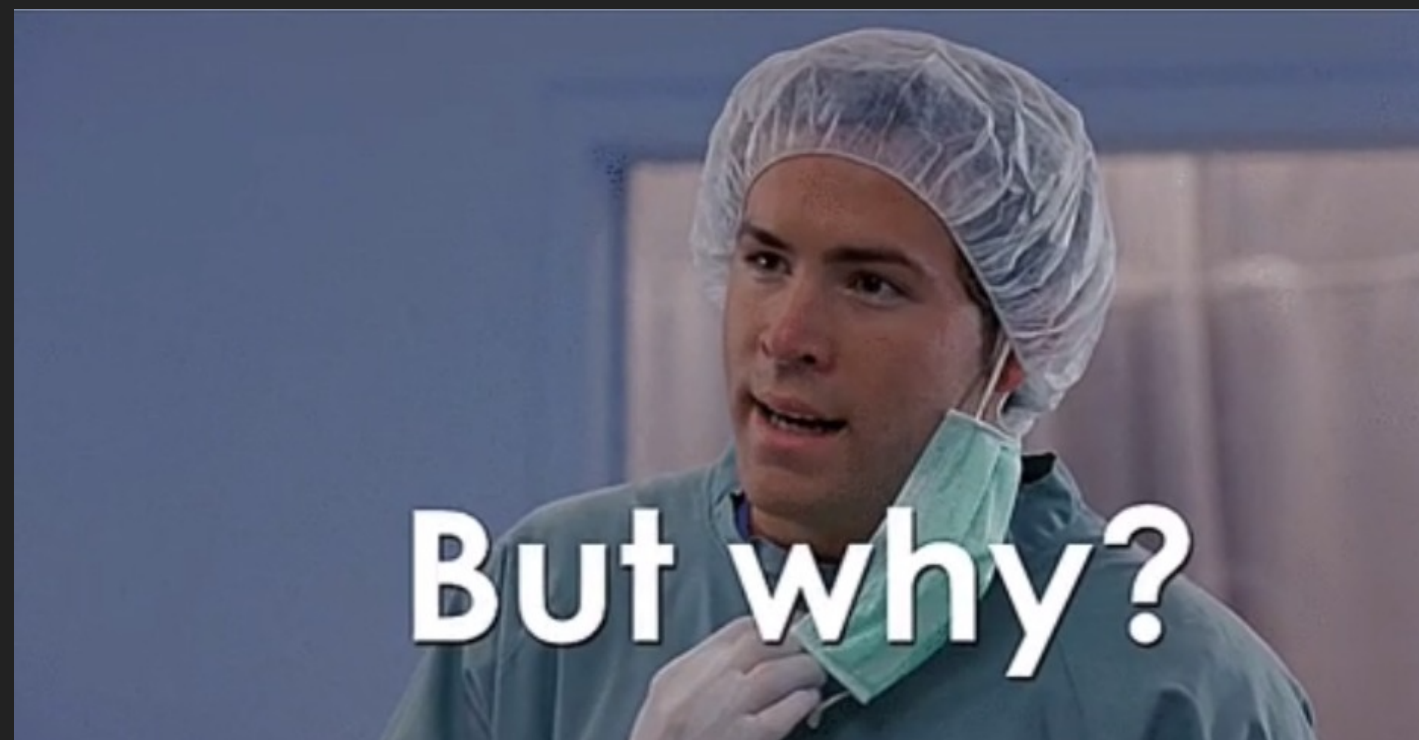
OPERATIONS : PREDICATION

*She slept yesterday.*

## PRESENTING OUR MODEL

OPERATIONS : PREDICATION

*She slept yesterday.*



## PRESENTING OUR MODEL

### OPERATIONS : PREDICATION

*She slept yesterday.*



**Predication** = Attitude, Pertinence,...

(Context : she never sleeps during the day...?)

## PRESENTING OUR MODEL

### OPERATIONS : PREDICATION

*She slept yesterday.*



**Predication** = Attitude, Pertinence,...

(Context : she didn't sleep today because...?)

## PRESENTING OUR MODEL

### OPERATIONS : PREDICATION

*She slept for 2 hours yesterday.*



Predication

# PRESENTING OUR MODEL

## OPERATIONS : PREDICATION



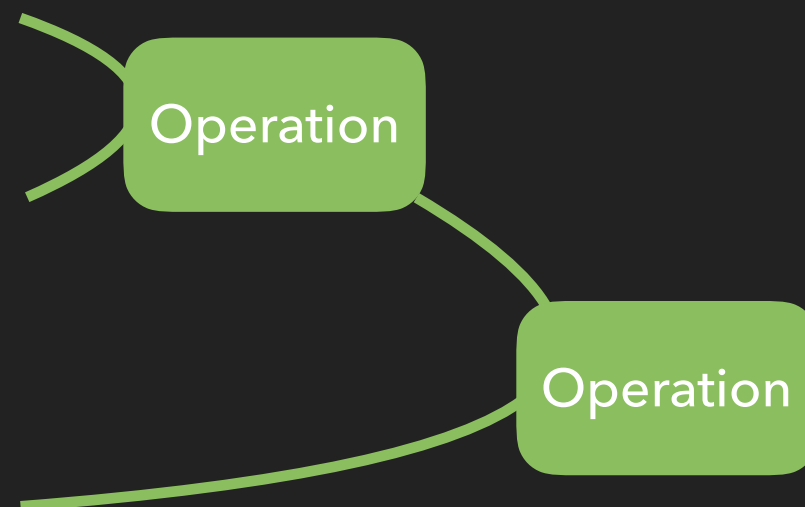


## PRESENTING OUR MODEL

BACK AGAIN TO THE SENTENCE...

*She slept during the show.*

- ▶ [g,\_,\_,\_]
- ▶ [\_,\_,\_,\_]
- ▶ [g,\_,\_,\_]
- ▶ [\_,s,a,\_]
- ▶ [\_,\_,\_,\_]

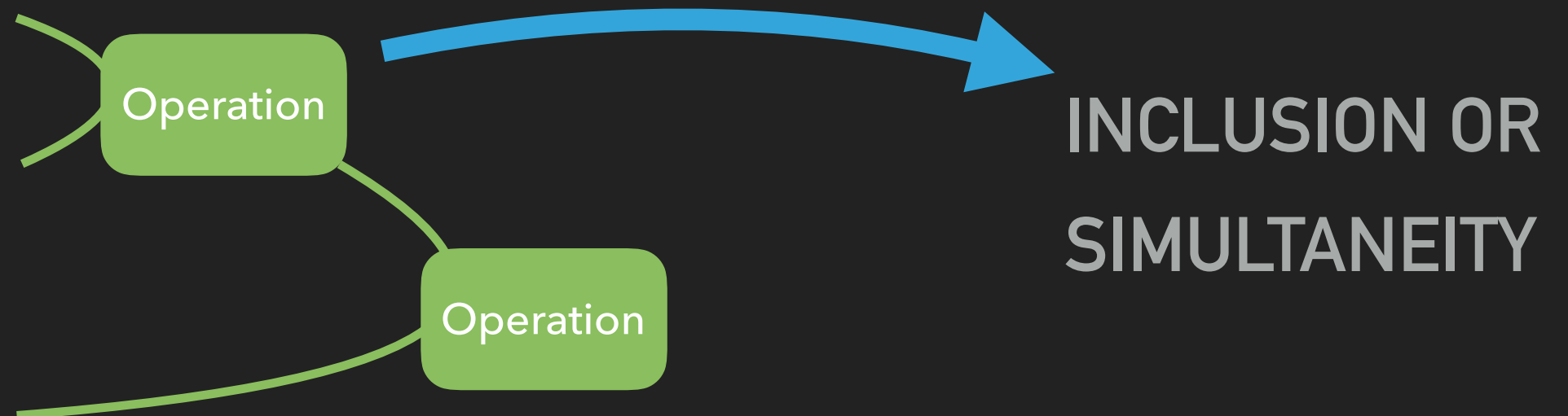


## PRESENTING OUR MODEL

BACK AGAIN TO THE SENTENCE...

*She slept during the show.*

- ▶ [g,\_,\_,\_]\_
- ▶ [\_,\_,\_,\_]\_
- ▶ [g,\_,\_,\_]\_
- ▶ [\_,s,a,\_,\_]\_
- ▶ [\_,\_,\_,\_]\_



# RESULTS

# RESULTS

	...in 2020.	...during one minute.	...during the show.
She ate cake...	Inclusion	Simultaneity (no anchoring)	Inclusion
She ate the cake...	Inclusion	Simultaneity	Inclusion
She had lunch...	Inclusion	∅	Simultaneity/Inclusion
She took a bite... (from a cake)...	Inclusion	∅	Inclusion

# RESULTS

	...en 2020.	...pendant une minute.	...pendant le spectacle.
Elle mangea du gâteau...	Inclusion	Simultaneity	Inclusion
Elle mangea le gâteau...	Inclusion	Simultaneity	Inclusion
Elle mangea un repas...	Inclusion	∅	Simultaneity/Inclusion
Elle goûta (un gâteau)...	Inclusion	∅	Inclusion

## RESULTS

	她在2020年...	她在演出的时候...
...吃蛋糕。	Inclusion	Inclusion
...吃整个(一个)蛋糕。	Inclusion	Inclusion
...吃午饭。	Inclusion	Simultaneity/Inclusion
...吃一口(蛋糕)。	Inclusion	Inclusion

	她在2020年...	她在演出的时候...
...吃了蛋糕。	Inclusion	Inclusion
...吃了整个(一个)蛋糕。	Inclusion	Inclusion
...吃了午饭。	Inclusion	Inclusion
...吃了一口(蛋糕)。	Inclusion	Inclusion

# CONCLUSION

# CONCLUSION

- ▶ A parsimonious and minimalist approach is possible !
  - ▶ Promising results in French and English...
  - ▶ ...but also in Chinese
- ▶ Applications :
  - ▶ Translation
  - ▶ Content analysis
  - ▶ Complementary unit for NLP



# QUESTIONS ?

## APPENDIX

## APPENDIX

## “OXFORD COMMA”

### *Oxford Comma Dispute Is Settled as Maine Drivers Get \$5 Million*



Oakhurst Dairy trucks at the family-owned, independent dairy in Portland, Me. A settlement put a period on the case. Pat Wellenbach/Associated Press



By **Daniel Victor**

Feb. 9, 2018

The case began in 2014, when three truck drivers sued the dairy for what they said was four years' worth of overtime pay they had been denied. Maine law requires time-and-a-half pay for each hour worked after 40 hours, but it carved out exemptions for:

The canning, processing, preserving, freezing, drying, marketing, storing, packing for shipment or distribution of:

- (1) Agricultural produce;
- (2) Meat and fish products; and
- (3) Perishable foods.

What followed the last comma in the first sentence was the crux of the matter: “packing for shipment or distribution of.” The court ruled that it was not clear whether the law exempted the distribution of the three categories that followed, or if it exempted *packing for* the shipment or distribution of them.

APPENDIX

SAMPLE TABLES FROM DAMIEN MUNCH

Sentence				Interpretation		
verb	co.	prep.	period	Corresp.	rep.	pred.
Efrom	F	I	M	after		vp
Efrom	F	I	2	slice		vp
Efrom	F	D	M	cover		vpp
Efrom	F	D	S	slice		vp
Efrom	F	D	S	cover		vpp
Eup	T	I	M	cover		vpp
Eup	T	I	M	after		vp
Eup	T	I	2	slice		vp
Eup	T	D	M	#	#	#
Eup	T	D	S	slice		vp
Elunch		I	M	cover		vpp
Elunch/bite		I	M	after		vp
Elunch/bite		I	M	after (?)	vp	vpr
Elunch/bite		I	2	slice		vp
Elunch/bite		I	2	slice (?)	vp	vpr
Elunch		D	M	#	#	#
Ebite		D	M	cover	vp	vpp
Elunch/bite		D	S	slice		vp
Ebite		D	S	cover	vp	vpp
Ebite		D	S	slice (?)	vp	vpr
Snore		I	M	after		vp
Snore		I	2	slice		vp
Snore		D	M	cover		vp
Snore		D	S	cover		vpp
Snore		D	S	slice		vp

(5) Predication	[vp= <b>g</b> , an=?]	→	[vp= <b>f</b> , an= <b>a</b> ]	Perception Images, Magnitudes, ...
(4) Zoom-in	[vp= <b>f</b> , an= <b>a</b> ]	→	[vp= <b>g</b> , an=?]	
(3) Granularity Conflict	C[vp= <b>g</b> , an= <b>a</b> ]	→	C[vp= <b>f</b> , an= <b>a</b> ]	
	or H[vp= <b>f</b> , an= <b>u</b> ]	→	H[vp= <b>g</b> , an=?]	
			<i>slice of C</i> <i>repetition of H</i>	
(2) Image merge	H[im1] + C[im2]	→	R[im1+im2]	
(1) Basic merge	H[vp, an] + C[vp, an]	→	R[vp, an]	

## APPENDIX

AIS : IMAGE

*# When his car broke down, the sun set.*

*# She celebrated her birthday every morning.*

*# She built her house during the show.*