Process-oriented translation and interpreting research

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COGS 500 guest lecture

Comprehension studies

Lexical decision in French

Click your fingers if it’s a French word
Bang the table if it is not
Make your responses as quickly but as accurately as you can

chaussure

panage

arbre

grenouille

ougin

coin

couteau

pauve

table

gartie

pain

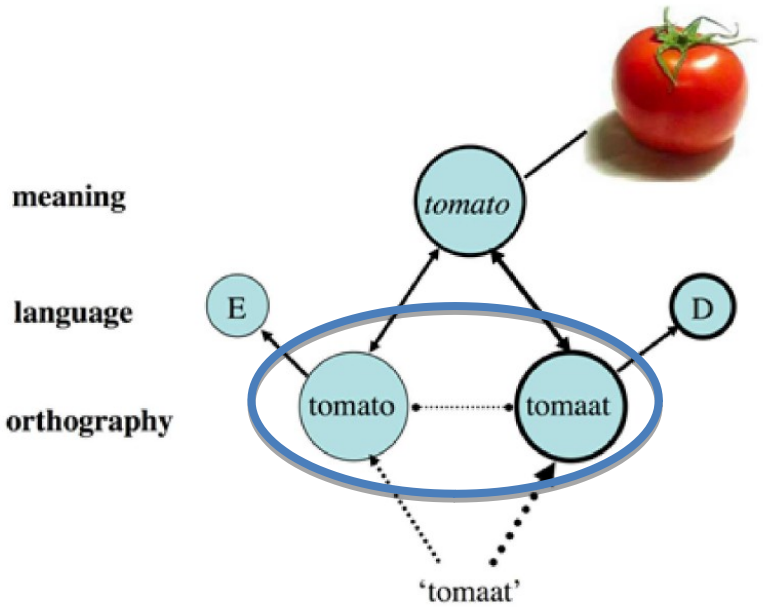
minute

True cognates	False friends (non-cognate interlingual homographs)
table	coin
minute	pain

Fast relative to matched non-cognate control words (e.g. arbre)

Slow relative to matched non-cognate control words (e.g. arbre)

Dijkstra et al, 1999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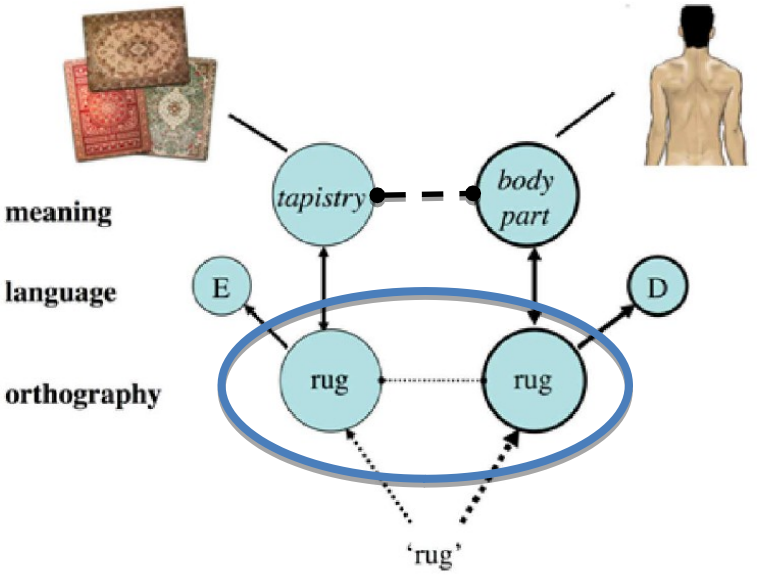
meaning
language
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Accessing meaning in context

When his home was attacked the pensioner was very

brave

MUSIC

Quilt-making is a traditional American

craft

FRABBLE

Who was very brave?

What craft is an American tradition?

The doctor told the patient to take another


pill


TABLET

The roasted chicken was served on a very large

e plate


DISH

The child thought the monkey was fun to

mimic

BLONG

The man enjoyed cooking so became a

chef

BOSS

The new set of knives proved to be extremely

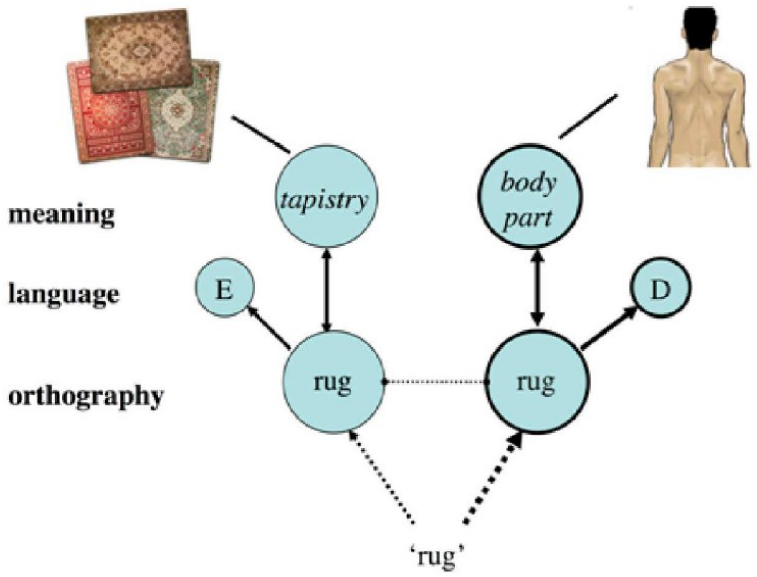
handy

TELEPHONE

What did the child do?

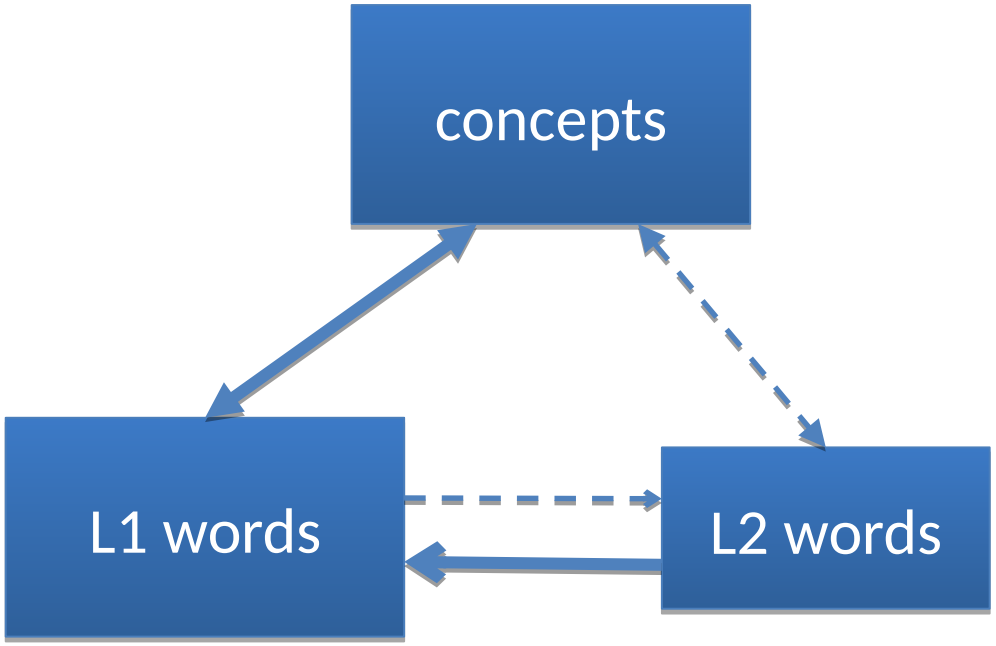
context	prime	target	
The doctor told the patient to take another	pill	TABLET	Related
When his home was attacked the pensioner was very	brave	MUSIC	Unrelated

Target lexical decision times faster on Related trials than Unrelated trials = “Semantic Priming”



Conclusion: In comprehension tasks in a single language bilinguals do not "switch off" their other language.
Effects strongest from the L1.
But some evidence that a strongly established L2 context can eliminate interference from the L1.

Bilingual lexical representation



Thierry & Wu's study shows use of the strong L2-to-L1 connection even at high levels of proficiency.

Kroll & Stewart (1994)
Kroll & de Groot (1997)

Production studies

Name (in English) the colour of the ink in which the word is printed

ballon

clou

ferme

bleu

frais

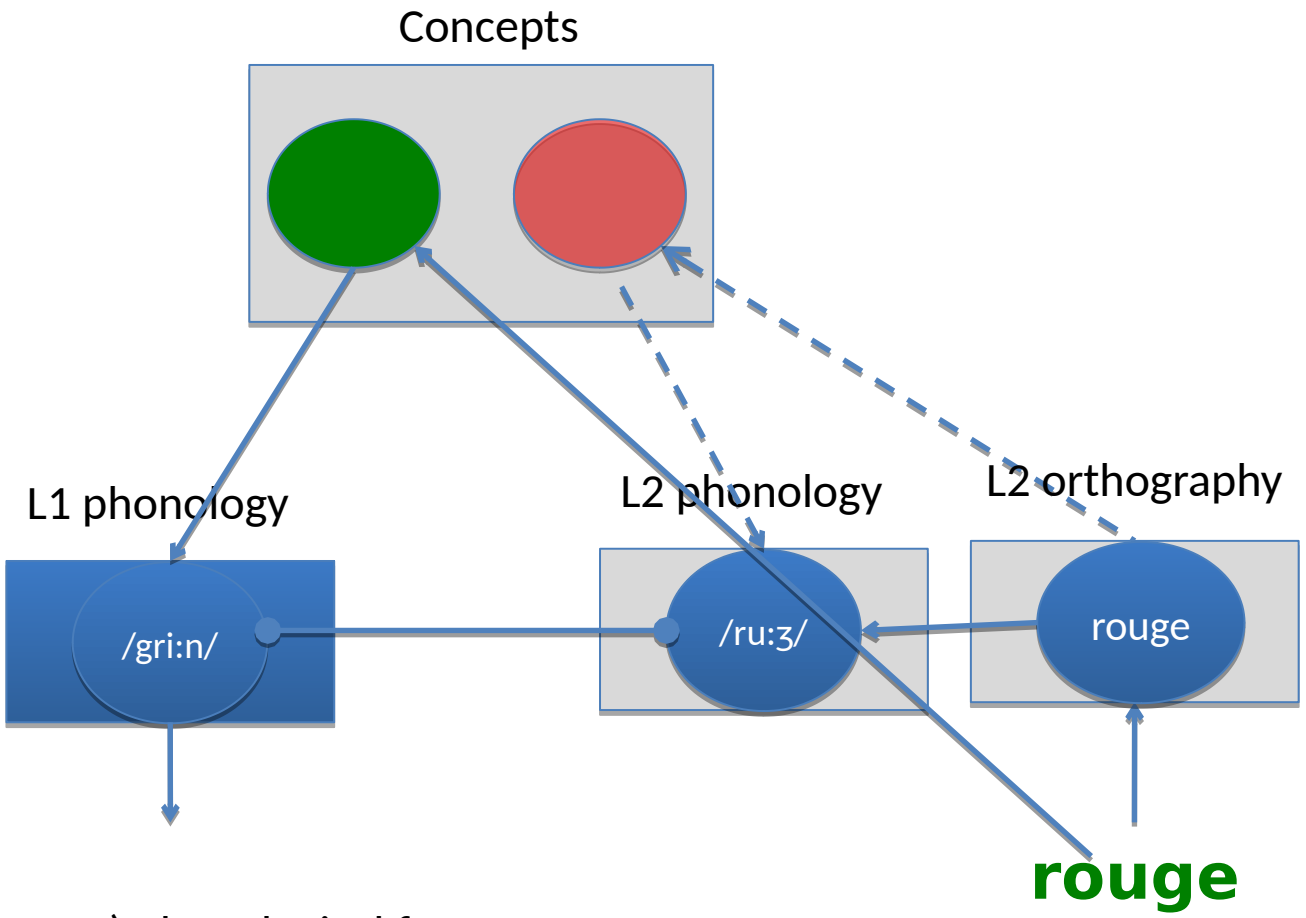
escalier

rouge

Stroop effect

John Ridley Stroop (1935)

Cross-language Stroop effect



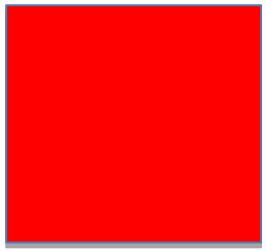
L1 and L2 (output) phonological forms compete even though only L1 is required for the task.

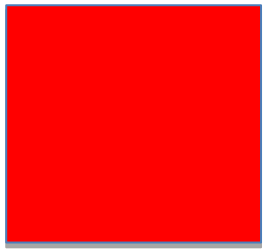
Being bilingual is good for your Executive Function (attention switching)

The Simon Task

Click with your LEFT hand if the stimulus is GREEN

Stamp with your RIGHT foot if the stimulus is RED



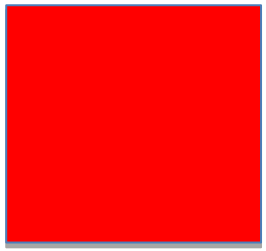


Congruent trial

Congruent trial

Incongruent trial

Incongruent trial



Bilingualism

- sounds, words, and concepts are active and competing for selection both during processing (comprehension) and during production
- individuals can experience both facilitation (i.e., positive transfer) and interference (i.e., negative transfer) from one language to the other languages across a range of tasks and contexts
- the mechanism controlling this interference is executive control

Process-oriented translation and interpreting studies

- **bilingualism**, i.e. advanced level of L2, includes multilingualism

- **TIS =** *Translation* (Kade 1963); "used in a broad sense, to refer to any way in which a fragment of source language can be turned into the analogous target language fragment, irrespective of input and output modality" (Christoffels 2004, p. 5)

*continuity, spatial-temporal setting, recursiveness

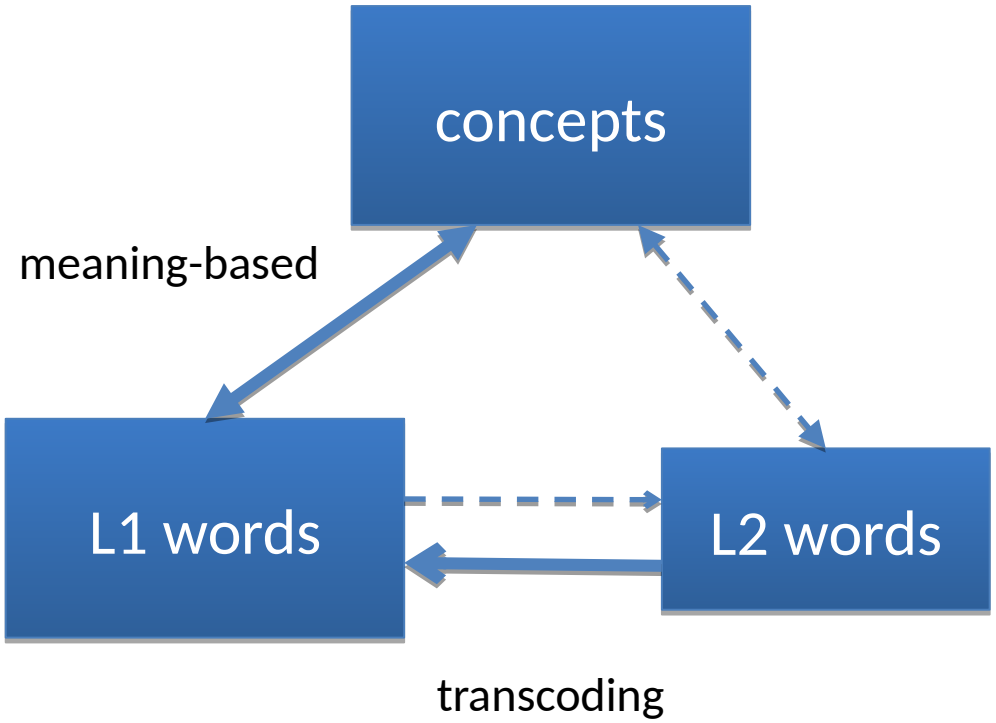
- **technology,** i.e. methods used to tap into the process

Process research

How does the mind represent two (or more) languages and how does it control processes that underlie translation and interpreting?

- Effort
- Strategies

Bilingual language representation (Schwieter and Ferreira 2017)



Translation tasks

- visual input (Schwieter and Ferreira 2014b)
- auditory input (Christoffels 2004)

Translation process

- Schaeffer and Carl (2013, 2014): translation process = literal translation + monitoring
- **Literal translation** is based on transcoding of shared representations (i.e. similarities in form) between the L1 and L2
- **Monitoring** is meaning-or context-based and recursive

A recursive model of translation

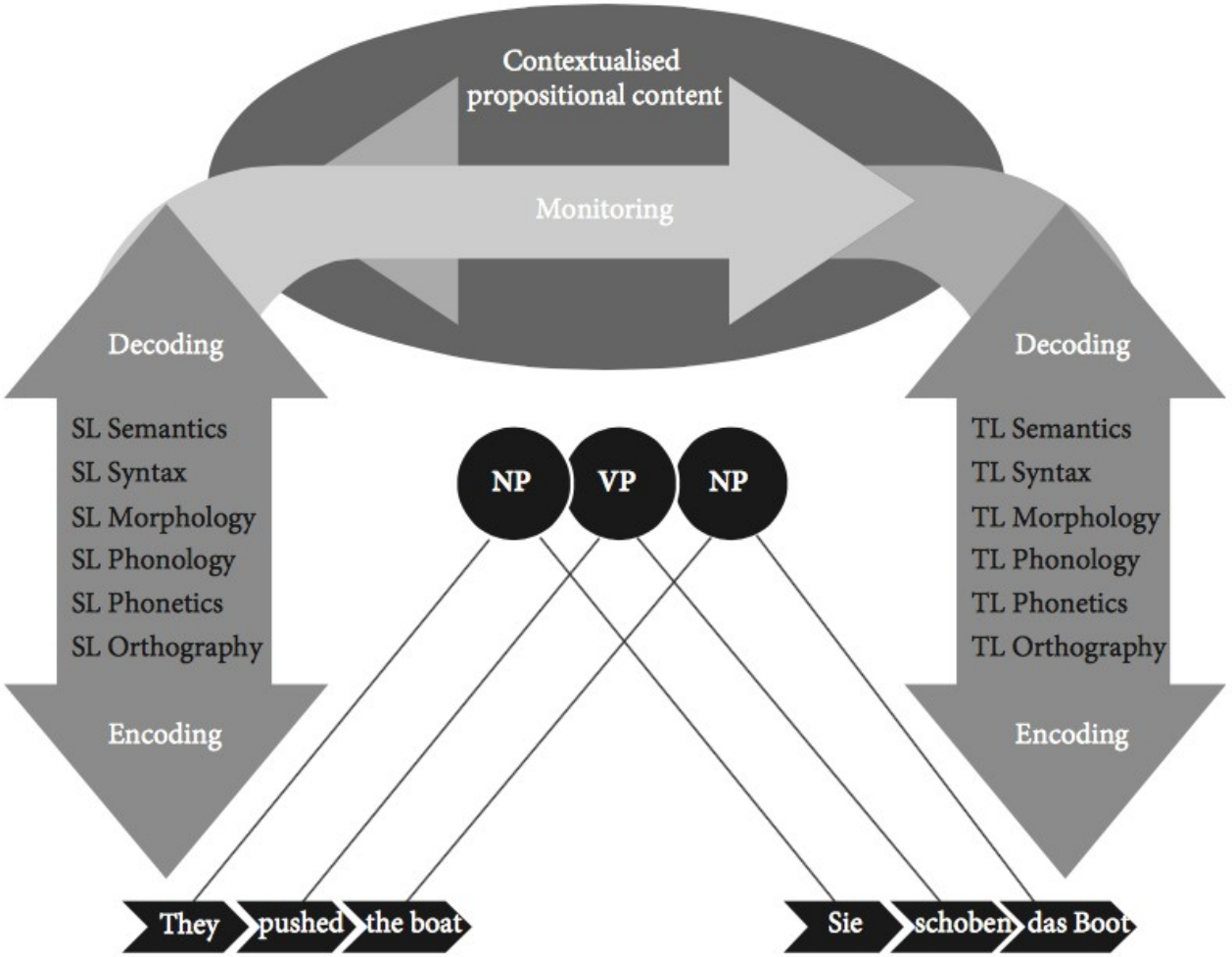


Figure 6. Recursive model of translation

Translation process

Hypothesis:

If translation process = literal translation + monitoring

then shared representations lead to facilitation (i.e. positive transfer from one language into another)

Schaeffer and Carl (2013)

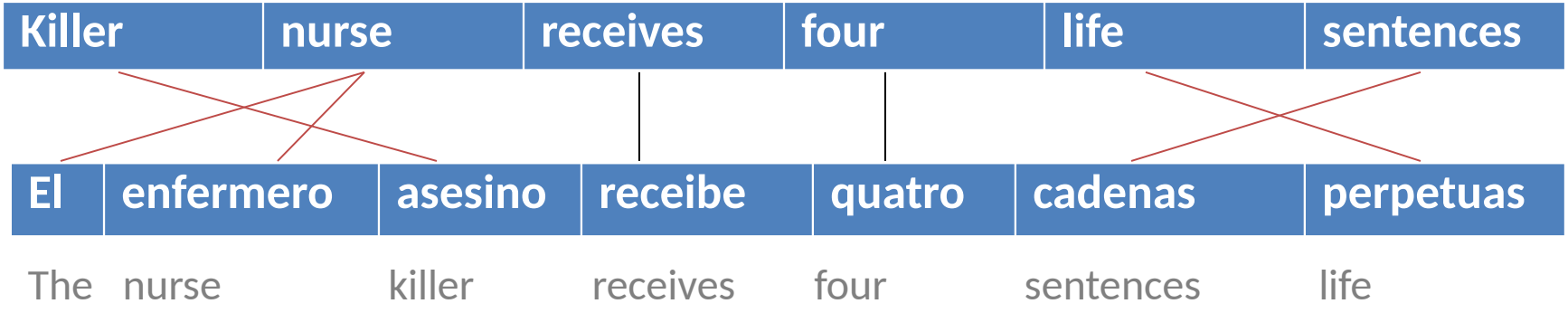
original	original	translation	recall	recall
they	((S(NP(PRP they))	Sie	they	((S (NP (PRP they))
lifted	(VP(VP(VBD lifted)	hoben	lifted	(VP (VP (VBD lifted)
the	(NP(DT the)	das	the	(NP(DT the)
boat	(NN boat)))	Boot	boat	(NN boat)))
and	(CC and)	an	and	(CC and)
slid	(VP(VBD slid)	und	pushed	(VP(VBD pushed)
her	(NP(PRP her))	schoben	her	(NP(PRP her))
into	(PP(IN into)	es	into	(PP(IN into)
the	(NP(DT the)	ins	the	(NP(DT the)
water.	(NN water)))))))	Wasser.	water.	(NN water)))))))

Recall of *Old Man and the Sea* by E. Hemingway

Lexical score (no. of correctly recalled words): 9/10
Syntactical score (correctly recalled structure): 10/10

Importantly, recall was better for shared representations

Schaeffer and Carl (2014)



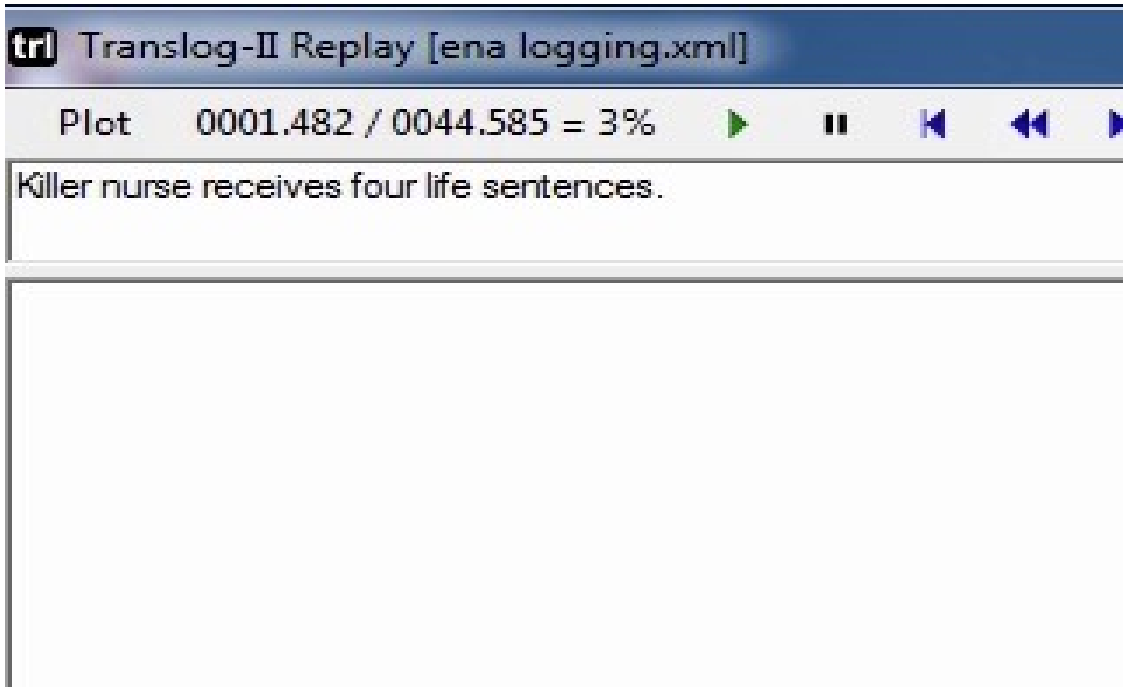
From Translation Process Research (TPR) database:
https://sites.google.com/site/centretranslationinnovation/tpr-db
Spanish, Danish, English, Chinese, Hindi and German

Monitoring - recursiveness: keystroke logging + gaze duration

Keystroke logging

- Translation act
- Translation event (from cognitive psychology, ERPs - event related potentials)
- Simulations of real-life translations with authentic texts (5-30min experiments)
- Recursiveness = change of translation event on lexical and syntactical level
- Higher recursiveness = higher cognitive effort

Keystroke logging: Translog



[Start]•[▼]
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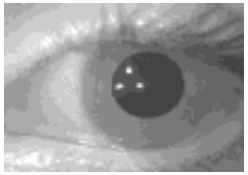
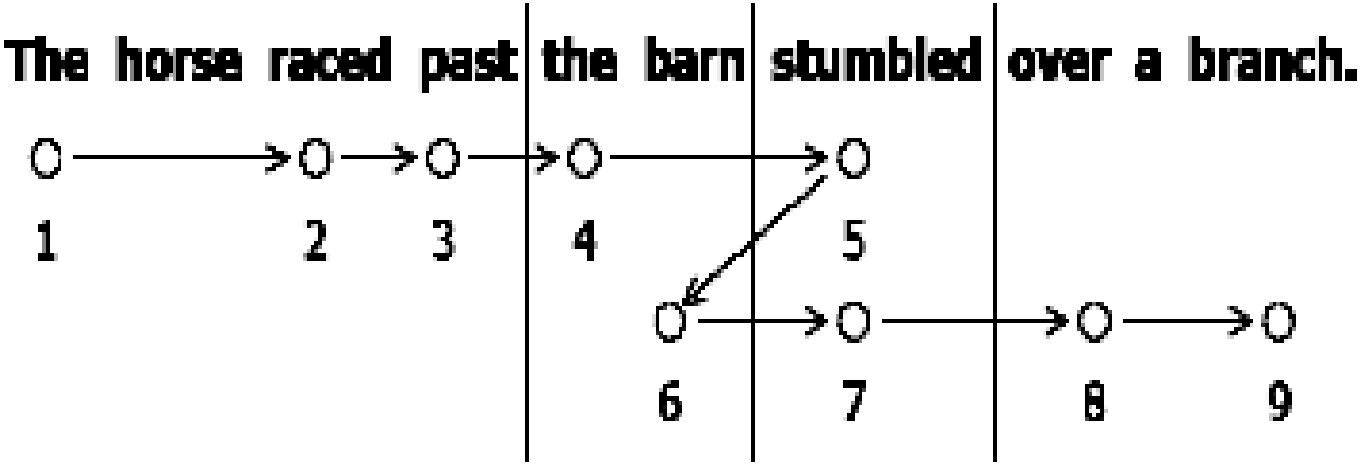
Eye tracking



- Human eyes constantly scan their environment.
- highly accurate at jumping to objects
- 3-4 “saccades” per second on average
- fast motion (90 degrees of arc in 100 millisec)
- low latency – short wires connect eyes to brain

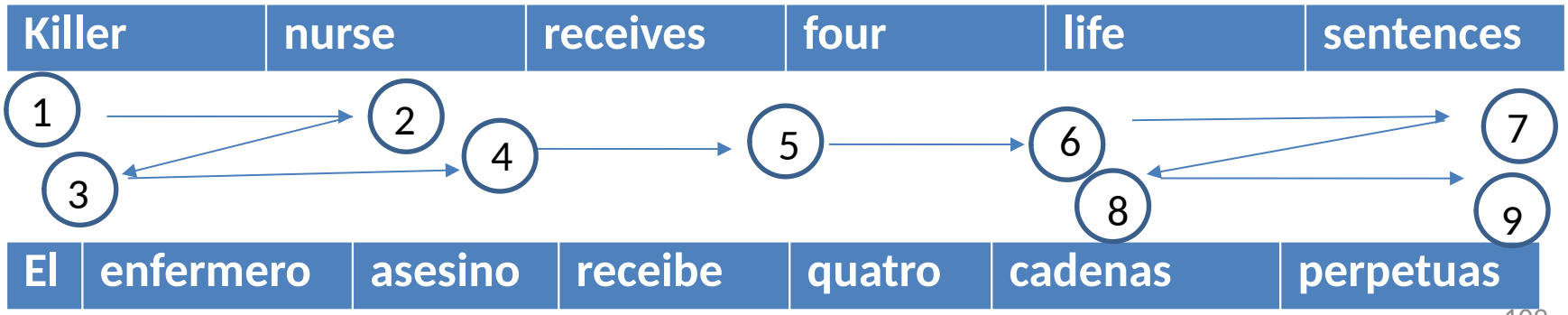
Eye tracking

- **Direction** of gaze reveals what is currently being processed
- **Length** of gaze reveals level of ease/difficulty of processing



Eye tracking

- **Direction** of gaze reveals what is currently being processed
- **Length** of gaze reveals level of ease/difficulty of processing
- **Recursiveness** = change of direction + longer gaze duration; as measure of higher cognitive effort



Eye tracking and keystroke logging: Translog II

Table 2.18 Four fixation units

FUid	Time	Dur	Pause	ParalK	Path
14	94,530	755	5293	755	1:4 + 1:4 + 1:4 + 1:4+
15	98,952	1844	3667	704	1:6 + 1:6 + 1:6 + 1:4 + 1:3 + 1:3 + 1:3 + 1:4 + 1:5+
16	101,577	1272	781	142	1:5 + 1:5 + 1:6 + 1:6 + 1:6 + 1:5 + 1:5+

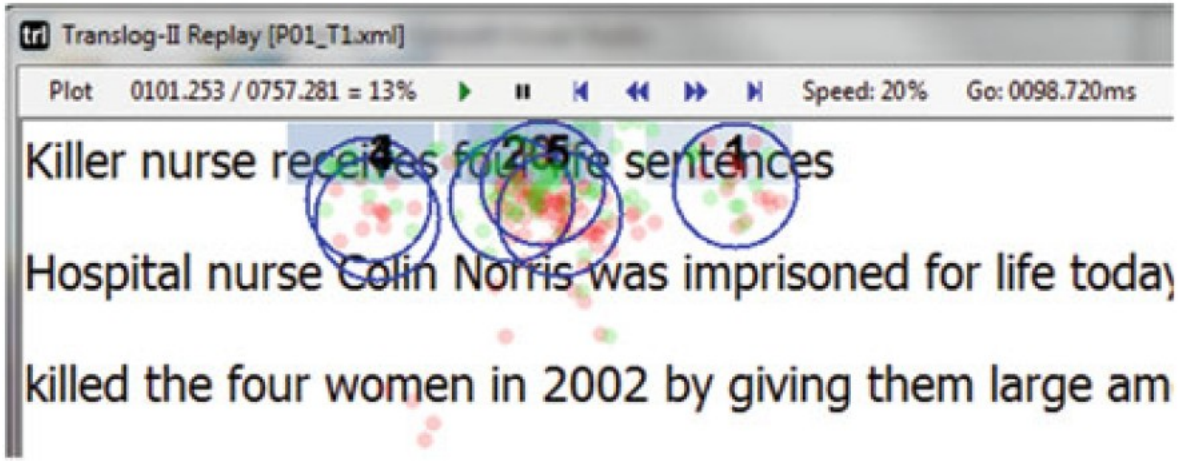
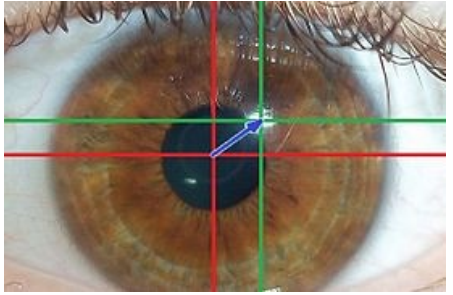


Fig. 2.4 Screen shot of replay situation of FU_{13}

Interpreting process



- Beyond the gaze - pupilometry

Seeber and Kerzel (2011): cognitive effort in simultaneous interpreting

- SOV: Wir glauben dass die Delegierten ihre Entscheidung

  We think that the delegates their decision

  nach einer langen Debatte treffen.

  after a long debate reach.

'We think that the delegates will reach a decision after a long debate.'

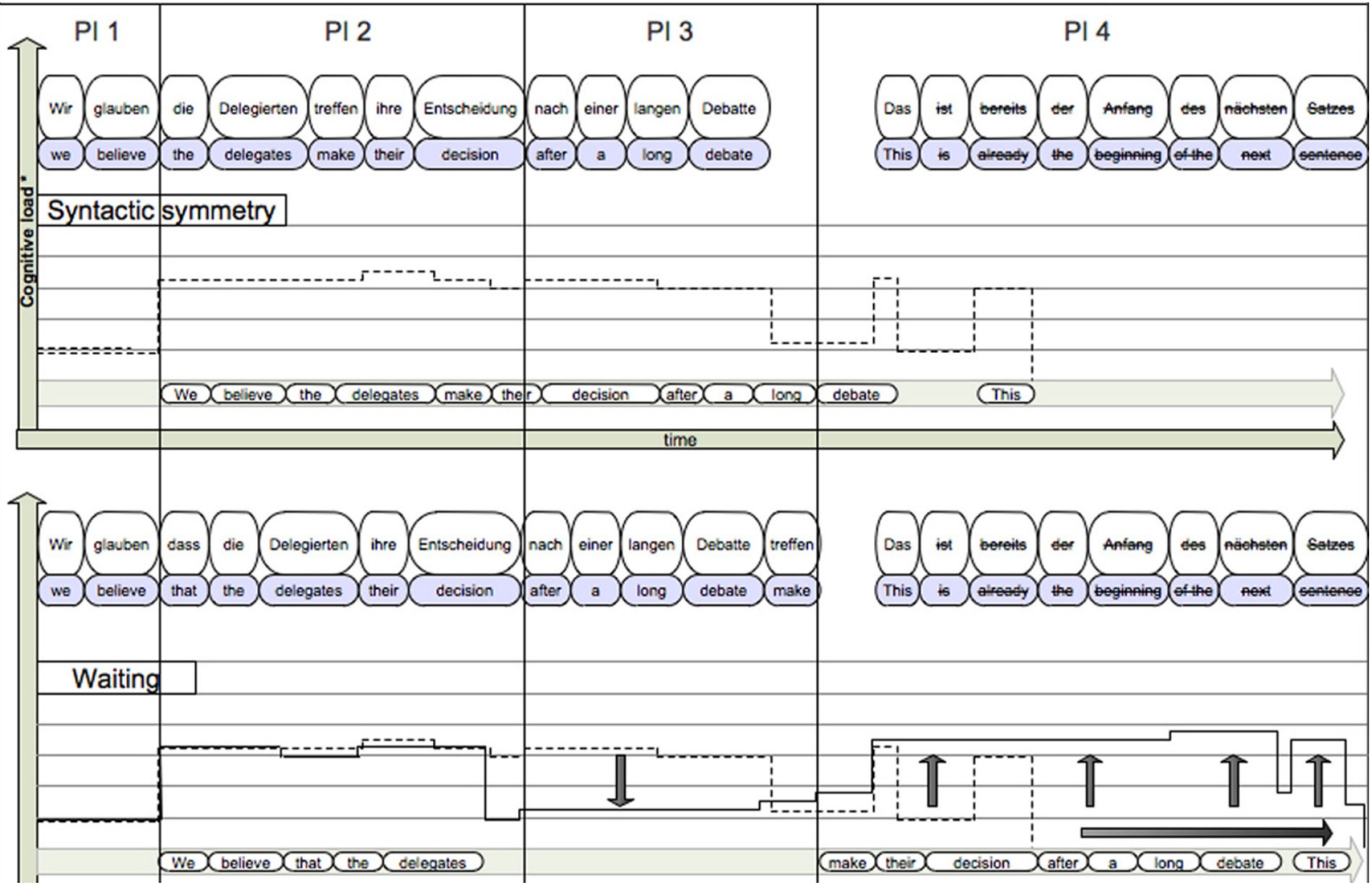
- SVO: Wir glauben die Delegierten treffen ihre Entscheidung

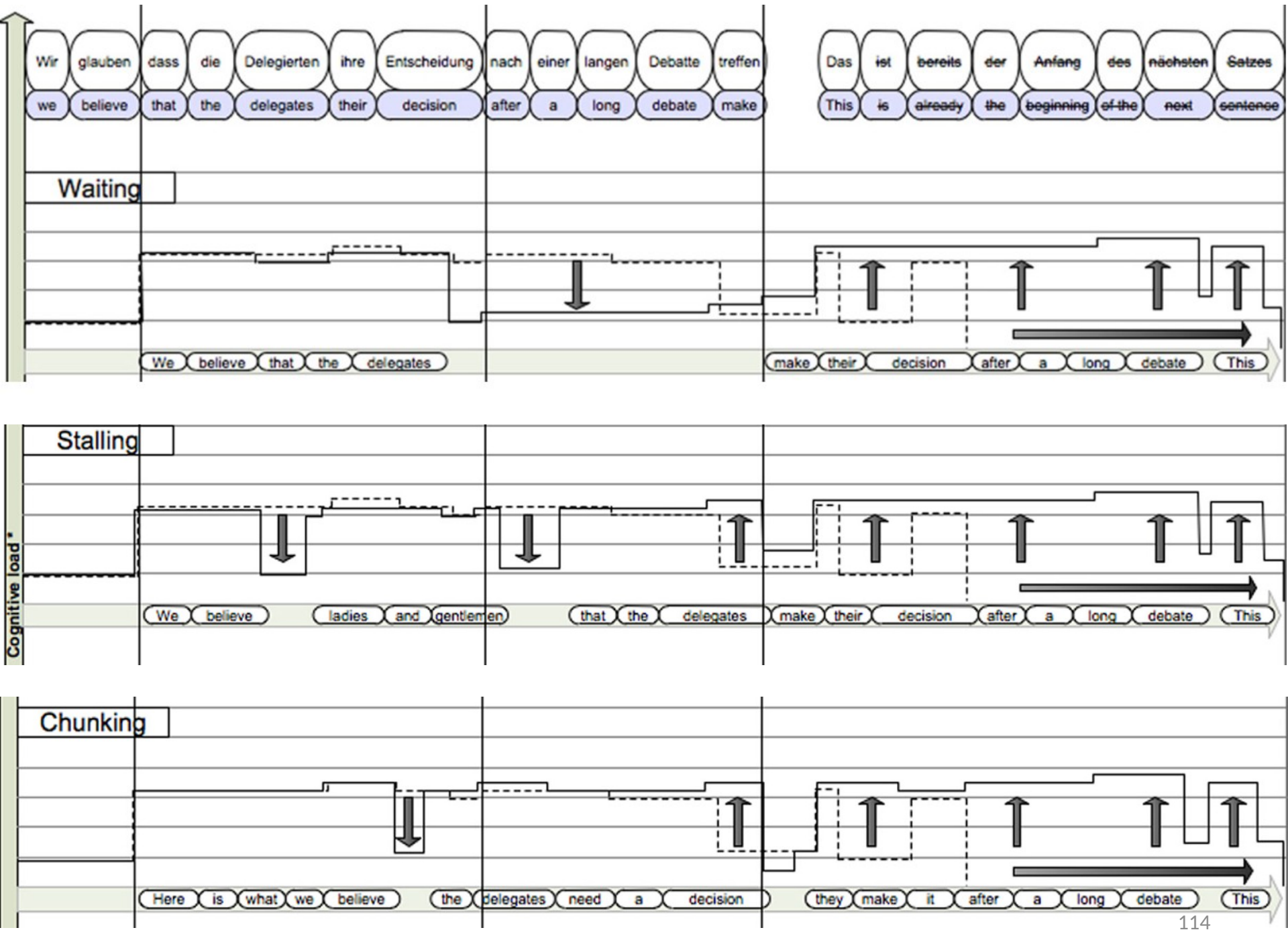
  We think the delegates reach their decision

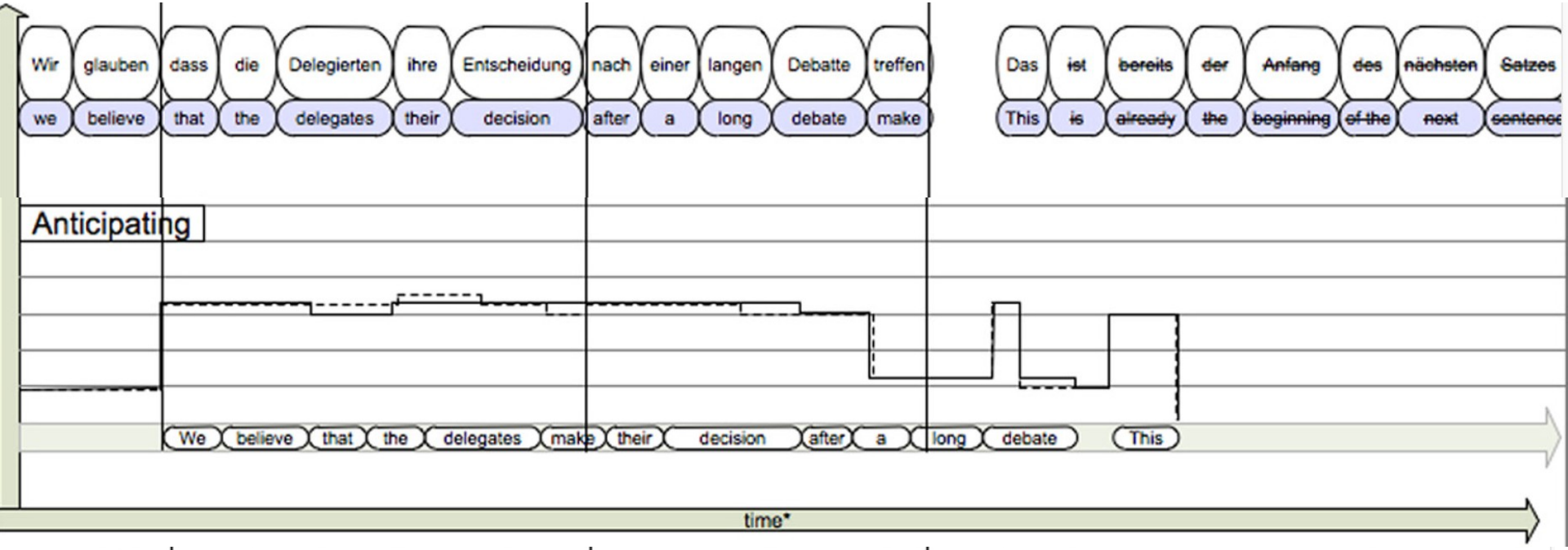
  nach einer langen Debatte.

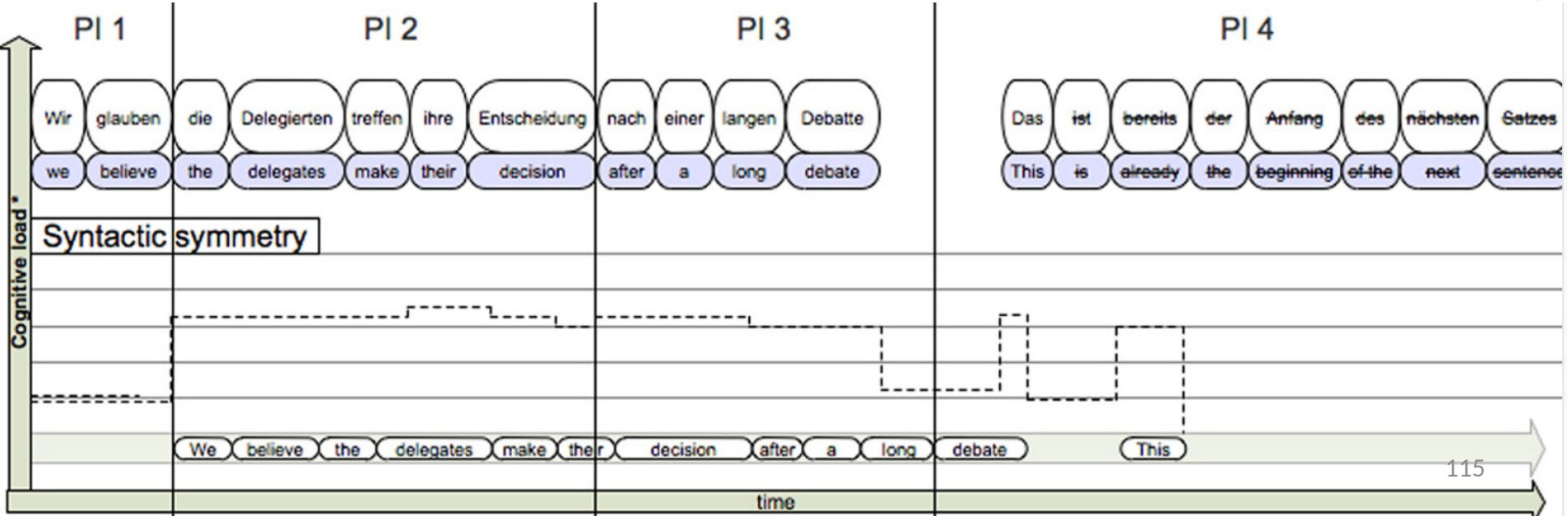
  after a long debate.

'We think the delegates will reach a decision after a long debate'


PI 1
PI 2
PI 3
PI 4
Wir glauben die Delegierten treffen ihre Entscheidung nach einer langen Debatte
we believe the delegates make their decision after a long debate
Das ist bereits der Anfang des nächsten Satzes
This is already the beginning of the next sentence
Cognitive load
Syntactic symmetry
We believe the delegates make their decision after a long debate This
time
Wir glauben dass die Delegierten ihre Entscheidung nach einer langen Debatte treffen
we believe that the delegates their decision after a long debate make
Das ist bereits der Anfang des nächsten Satzes
This is already the beginning of the next sentence
Waiting
We believe that the delegates
make their decision after a long debate This


Wir glauben dass die Delegierten ihre Entscheidung nach einer langen Debatte treffen
we believe that the delegates their decision after a long debate make
Das ist bereits der Anfang des nächsten Satzes
This is already the beginning of the next sentence
Waiting
We believe that the delegates
make their decision after a long debate This
Stalling
Cognitive load *
We believe ladies and gentlemen that the delegates make their decision after a long debate This
Chunking
Here is what we believe the delegates need a decision
they make it after a long debate This


Wir glauben dass die Delegierten ihre Entscheidung nach einer langen Debatte treffen
we believe that the delegates their decision after a long debate make
Das ist bereits der Anfang des nächsten Satzes
This is already the beginning of the next sentence
Anticipating
We believe that the delegates make their decision after a long debate This
time*


PI 1
PI 2
PI 3
PI 4
Wir glauben die Delegierten treffen ihre Entscheidung nach einer langen Debatte
we believe the delegates make their decision after a long debate
Das ist bereits der Anfang des nächsten Satzes
This is already the beginning of the next sentence
Syntactic symmetry
Cognitive load*
We believe the delegates make their decision after a long debate This
time

Translation and interpreting process findings (so far)

How does the mind represent two (or more) languages and how does it control processes that underlie translation and interpreting?

- Languages seem to be represented based on their shared characteristics
- A recursive monitoring mechanism is used to cope with interference between languages, i.e. for error correction, which increases cognitive effort
- Strategies (e.g. stalling, waiting, prediction, etc.) are used to relieve cognitive effort

Process-oriented translation and interpreting research

- has opened up rich new field of exploration by means of computational and statistical methods
- has made it possible to test hypotheses about:
  - effects of SL/TL syntactic asymmetries
  - language-pair relatedness effects
  - effects of literality
  - directionality effects

- has led to valid conclusions about:
  - ST/TT alignment
  - comparisons between translation and reading, writing, and listening

Process-oriented translation and interpreting research

- by looking at the **process** of translation and interpreting, we can gain a deeper understanding of **strategies** (or tactics, see Gile 2009) used during translation and interpreting
- focus on process: mind-brain-behaviour correlation
- process analysis focuses on mind-brain-behavior correlation and maps cognitive processes rather than social actions

Process-oriented translator and interpreter training

Provides methodological guidance: raises the awareness of students regarding problems and suggesting *principles*, *methods* and *procedures*

Advantages of this approach:

- Students are more likely to learn and select strategies faster
- More focus on general skills than on specific word and structure solutions
- No imposition of standards on students

Key references

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Thank you!

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