

Philological Society meeting, Murray Edwards College, 18 March 2023

# Tensed and Tenseless Languages for Tenseless Reality: The Importance of Cross-Linguistic Data in the Philosophy of Time

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Brian D. Joseph, 2020, ‘What is time (and why should linguists care about it)?’ *Language* 96: 908-937

(LSA presidential address)

- “...humans have always had, and continue to have, an ‘uneasy’ relationship with time...” (p. 913)
- “...linguists are in a position to take a ‘long’ view of time and diachrony” (p. 916)
- “...speakers live in what is really an ‘extended present’...” (‘specious present’) (p. 917)
- >> understanding of humanity

# Outline

**Part I:** ‘Time’ and ‘tense’: metaphysics, epistemology, linguistics

**Part II:** Emergentism and the flow of time

**Part III:** Time as epistemic commitment: Evidence from tensed and tenseless languages

**Part IV:** Semantic representation: A contextualist perspective

## Part I

‘Time’ and ‘tense’:   
metaphysics, epistemology, linguistics

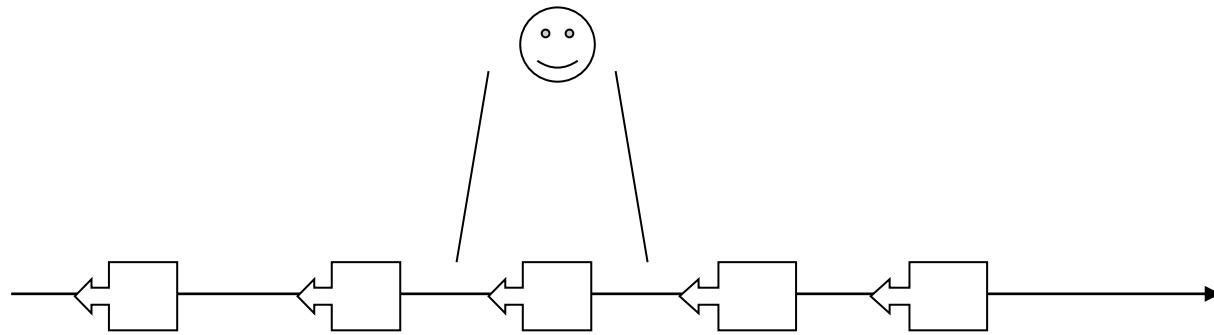
What does it mean for human time to be dynamic?

metaphysics of time

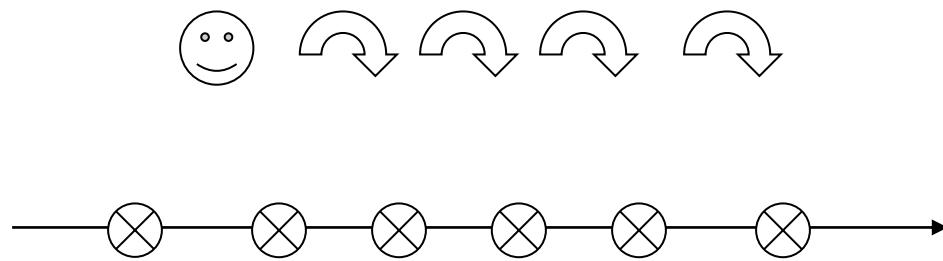


the concept of time as expressed through linguistic  
expressions of temporal reference and time flow

# Time: past, present, future (A-series)



# Time: earlier-than/later-than (B-series)



“...I shall speak of the series of positions running from the far past through the near past to the present, and then from the present to the near future and the far future, as the A series. The series of positions which runs from earlier to later I shall call the B series. The contents of a position in time are called events.”

McTaggart (1908: 111)

McTaggart, J. E. 1908. ‘The unreality of time’. *Mind* 17.

“Why do we believe that events are to be distinguished as past, present, and future? I conceive that the belief arises from distinctions in our own experience.

At any moment I have certain **perceptions**, I have also the **memory** of certain other perceptions, and the **anticipation** of others again. The direct perception itself is a mental state qualitatively different from the memory or the anticipation of perceptions.”

McTaggart (1908: 127)

# Current debates

A-theorists ('tensed reality') vs B-theorists ('tenseless reality')

C-theorists ('tenseless' reality, symmetrical universe)

# From time<sub>M</sub> and time<sub>L</sub> to time<sub>E</sub>

time<sub>M</sub> (metaphysical time)

time<sub>E</sub> (epistemological time)

time<sub>L</sub> (linguistic time)

tense<sub>M</sub>

tense<sub>L</sub>

## Part II

### Emergentism and the flow of time

“Those who kill time commit temporal suicide.”

Flaherty (2011: 29)

# From emergentism to the ego-perspective

“...the microlaws create the space for emergent systems with robust capabilities for self-governance.” Ismael (2016: xi)

“...self-governance involves the creation of an internal point of view on the world, and so it opens up the psychological space for the growth of the self...” Ismael (2016: 39)

# From emergentism to the ego-perspective

Flowing time<sub>E</sub> is the most sensible explanation of reality that humans came up with:

“[T]ime is that direction on the manifold of events in which we can tell the strongest or most informative stories”.

Callender (2017: 142)

# From emergentism to the *ego*-perspective

- Time appears to be dynamic because humans make sense of static time in that way.
- We have to focus not on the indexicality/deictic nature of time but on the indexicality of the thinking agent, the 'I' (metaindexicality).

# Being mistaken about events

- One can entertain thoughts about oneself from an ‘internal’ or from an ‘external’ perspective
- The internal perspective has the property of immunity to error through misidentification (IEM, e.g. Recanati 2007, 2012)

➤ English: ‘remembering doing something (the *verb+ing* construction) and ‘remembering that I *verb+ed*’. The latter is open to misidentification of the agent. (Higginbotham 2003)

# Being mistaken about time

Analogous to the first-person beliefs, time beliefs can be immune to error from misidentification (as present, past or future) or they can lack this immunity. (= ‘temporal IEM’)

# Double indexicality of time

Time is ‘doubly indexical’:

external perspective (e.g. my driving test *is in the past*)

agent’s internal perspective (e.g. I wake up and strongly believe, under the influence of my dream, that I haven’t yet passed my driving test; it is still *in the future*).

An event is externally (covertly) in the past and internally (overtly) in the future.

→ metaindexing to the ego

# Metaindexicality and the properties of the flow

→ Time<sub>E</sub> is ‘doubly indexical’: the past, the present and the future are such not only with respect to the thinking agent as assessed from the external perspective but also as assessed from the agent’s internal perspective, **where the two perspectives can come apart**.

# Anchoring to the ego

Time passes quickly/slowly when the 'density of experience' per temporal unit is low/high.

Flaherty 2018

# Metaindexicality and the properties of the flow

- Kappa effect: effect of the physical distance between two stimuli
- spatial scales
- emotions and other mental activity (cf. Cossins 2019)

# Time<sub>E</sub> and the A theory

It is possible to conceptually **dissociate** dynamic *qua* perspectival time<sub>E</sub> from the A-series (dynamic time<sub>M</sub>)

But:

Arguably, the onus of proof is on the ‘dissociationists’ rather than the ‘convergentists’: taking time<sub>M</sub> and time<sub>E</sub> to be *both static or both dynamic* pre-empts the need to explain the incompatibility.

# Onus of proof...

dynamic time<sub>E/L</sub> + static time<sub>M</sub> (B-series static)

static time<sub>E/L</sub> + static time<sub>M</sub>

My answer: both time<sub>M</sub> and time<sub>E/L</sub> are inherently static

# Static time<sub>E/L</sub>? ...

It is not unquestionable that we think that time really passes.

# Popular science and the B-series

- Increasing awareness of Einstein's theory of special relativity;
- We don't *observe* any absolute, non-deictic direction of time flow, neither do we *observe* any absolute, non-deictic rate. Directions such as 'the past is behind us' and 'the future is ahead' are culturally imprinted and vary;
- The experience of the interval is subjective and is recognised as such.



- (i) Where exactly does the dynamicity come from?
- (ii) How crucial is dynamicity to human beliefs about time?

# Static vs. dynamic: a clash?

“The apparent conflict between the familiar, flowing time of everyday experience and the static time of the Block Universe has a stubborn way of reasserting itself as a substantive and all-important **metaphysical disagreement**, even in my own mind. It is a reminder of the constant tension in the human between the transcendent and embedded viewpoints, which is in its turn the product of the peculiarly human form of mindedness.”

Ismael (2017: 35)

# Semi-propositional beliefs

‘Time is just a dimension of static spacetime.’

‘The universe is governed by symmetrical laws.’

A belief is semi-propositional when it is held in spite of not being fully understood.

Semi-propositional beliefs are reflective (as opposed to intuitive, spontaneous): people are aware of holding them (Sperber 1985, 1996). They are popular representations of a scientific representation of reality and as such are a kind of **metarepresentation** (Sperber 2000).

# Metarepresentations

The conception of a static, block universe has the status of a 'semi-propositional' representational belief.

# Semi-propositional beliefs

Metarepresentational link:

$\text{time}_E = \text{"time}_M"$

$\text{?Time}_E \text{ flows} = \text{"Time}_M \text{ doesn't flow"}$

## Part III

Time as epistemic commitment:  
Evidence from tensed and tenseless languages

# Temporal reference in natural languages

English: grammatical tenses in combination with grammatical aspect; adverbials.

A language is tensed when it contains grammaticalised expressions that stand for temporal reference. These have to be absolute rather than relative (the coding time has to constitute the default deictic centre).

# Tenseless languages

E.g. Yucatec Maya, Mandarin Chinese, Paraguayan Guarani (Tupi-Guarani), Burmese (Sino-Tibetan), Dyirbal (Australian Aboriginal, Pama-Nyungan), West Greenlandic (Kalaallisut, Eskimo-Aleut), Hopi (Uto-Aztecán, Arizona), Hausa (Chadic, Afroasiatic)

aspect and mood markers, modality and evidentiality markers, different inventories of temporal adverbials, or pragmatic inference from context, sometimes making use of default interpretations of constructions without overt temporal markers

# Yucatec Maya: aspect, mood, temporal distance

- very little overt time marking
- very scarce expressions of temporal ordering such as 'after' or 'while'
- aspect-mood markers
  - aspect (terminative, progressive, prospective)
  - mood e.g. necessitive ('I need/needed/will need to read the paper.'), desiderative ('I want/wanted/will want to read the paper.')
  - temporal distance (proximate, immediate/recent, remote)

# Lexicon-grammar-pragmatics trade-offs

# Yucatec Maya: aspect, mood, temporal distance

(1)	<b>Mukah</b>	in	xok-∅	le	periyòodiko-o'.
	<b>PROSP.3SG</b>	1SG	read( <b>SUBJ</b> )(3SG)DEF		newspaper
'I am/was/will be/going to read the paper.'					

(from Bohnemeyer 2002: 5)

PROSP – prospective aspect-mood marker

SUBJ – subjunctive verb form

DEF – definiteness marker

# Yucatec Maya: aspect, mood, temporal distance

## (2) Proximate:

**Ta'itak** in **xok-ik** le **periyòodiko-o'**.

**PROX** 1SG **read-INC(3SG)** DEF **newspaper**

'I have/had/will have almost read the paper.'

## (3) Immediate:

**Táant** in **xok-ik** le **periyòodiko-o'**.

**IMM** 1SG **read-INC(3SG)** DEF **newspaper**

'I have/had/will have just read the paper.'

PROX, IMM – aspect-mood markers: proximate, immediate

INC – marker of incompletive status

# Yucatec Maya: aspect, mood, temporal distance

(4) Recent:

<b>Sáam</b>	in	xok-∅	le	periyòodiko-o'.
<b>REC</b>	1SG	read(SUBJ)(3SG)	DEF	newspaper

'I read/had read/will have read the paper a short time ago.'

(5) Remote:

<b>Úuch</b>	in	xok-∅	le	periyòodiko-o'.
<b>REM</b>	1SG	read(SUBJ)(3SG)	DEF	newspaper

'I read/had read/will have read the paper a long time ago.'

(adapted from Bohnemeyer 2002: 9)

REC, REM – aspect-mood markers: recent, remote

# Yucatec Maya: aspect, mood, temporal distance

e.g.

proximate **relative** future

immediate **relative** past

recent **relative** past

remote **relative** past

# Paraguayan Guaraní

- Only temporal adverbials and context to mark temporal reference. Aspect, modality and mood can be grammatically marked.
- Default interpretation: the temporality of the event, state, or process overlaps with that of the reference time.

(Tonhauser 2011)

# West Greenlandic (Kalaallisut), an Eskimo language

- mood markers combined with aspect

Present- or past-time reference is conveyed through **factual moods** (of introducing, presupposing or inquiring about facts) with further disambiguation provided by aspect and the context.

The future is rendered by **prospective markers** such as statives ('be likely'), inchoatives ('begin') and by prospective mood such as the imperative ('let us').

(Bittner 2005)

# Hausa (Chadic, Afro-Asiatic)

(6) **Ta-nā`** wā`sā

3SgF-**CONT** play

‘She is/was/will be playing.’

(7) **Sun** gyārà mōtā`sà

3Pl-**COMPL** repair car.his

‘They (have/will have) repaired his car.’

only aspect marking

CONT = continuous; COMPL = completive

(from Mucha 2013: 381)

# ‘Hierarchy of simplicity’

Sentences with continuous aspect are by default interpreted as having present-time reference and sentences with completive aspect as referring to the past.

A ‘hierarchy of simplicity’ (Mucha 2013: 392):

present-time reference (no displacement) > past (temporal displacement) > future (temporal and modal displacement)

→ focus on the status of the situation

# Thai: optional tense and aspect; default interpretations

(8)       $f_3$ on     $t_1$ ok  
            rain    fall

- (a) 'It is raining.' (default meaning)
- (b) 'It was raining.' (possible intended meaning)

(from Srioutai 2006)

# Thai: optional tense and aspect; default interpretations

(9)       $k_1r_3eml_3in$      $c_1ap$      $ng_3u:$      $d_1ay_1''$   
Gremlin      catch      snake       $d_1ay_1''$

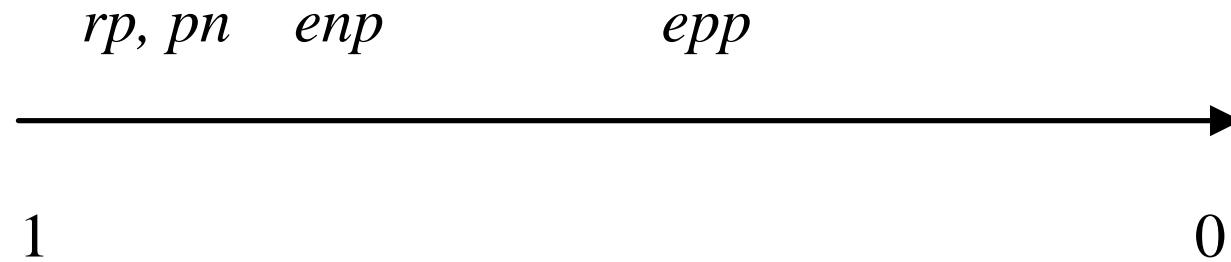
- (a)      'Gremlin **was able to catch** a snake (and he caught it).'  
(default meaning)
- (b)      'Gremlin **can catch** a snake (if he wants to).'  
(possible intended meaning)

(from Srioutai 2006)

# English: tense and modality

- (10) I read *Down Girl* last week. (*regular past*)
- (11) This is what happened yesterday. I am reading *Down Girl* and suddenly the door opens... (*past of narration*)
- (12) I would have finished reading by then. (*epistemic necessity past*)
- (13) I must have been reading (then). (*epistemic necessity past*)
- (14) I may have been reading (then). (*epistemic possibility past*)
- (15) I might have been reading (then). (*epistemic possibility past*)

# Degree of epistemic commitment for expressions with past-time reference



# Time as Modality: Supervenience

supervenience of the concept of time on the concept of epistemic detachment

(= definitional dependence of temporal properties on modal properties in semantics)

# Time and the *ego* (again)

The degree of remoteness, or current relevance, or degree of certainty, can be lexically or grammatically marked in preference to absolute temporal reference.

# From cross linguistic variation to the universal level of concepts

# Levels of concepts

Forms of temporal reference employed in natural languages give us a window on the human concept of time.

But they only give us a window on **online thinking**, not on the ultimate properties of temporal concepts *per se*. How we speak tells us about '**thinking for speaking**'. (Slobin 1996)

# Levels of concepts

... and about 'experiencing for thinking' (Levinson 2003: 304-306):

Yucatec:      'plastic'      'wood'      'maize'

English:      'bottle'      'plank'      'pancake'

(examples from J. A. Lucy)

The concepts we employ in 'thinking for speaking' are often **complex** concepts rather than primitive, 'atomic'/'subatomic' building blocks.

# Neo-Whorfianism

Universals in the conceptualization of time are not to be found on the level of linguistic semantics: no extant semantic account generalizes to all tenseless languages (*pace* Matthewson 2006).

They are to be found on the level of **conceptual building blocks** that underlie very different conceptualizations

- (i) of space and spatial relations in different languages  
(Levinson, e.g. 2003)
- (ii) of temporal reference (Jaszczolt, e.g. 2009, 2020)

# Time as degrees of commitment

→ Time is a graded commitment to events,  
and as such it is modal-epistemic.

# Time as degrees of commitment

Events can be understood or remembered to different degrees; they can also be anticipated more, or less, strongly. Inference about events can be monotonic or non-monotonic, and as such be more, or less, trustworthy (modal supervenience, e.g. Jaszczolt 2009)

# Time as degrees of commitment

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The concept of time rests on building blocks that mark such degrees of commitment – the degrees to which we are prepared to endorse statements about the past, the present, and the future.

# Neo-Whorfianism

- Language diversity does not have to lead to the conclusion of linguistic relativity (to language-dependent  $\text{TIME}_{\text{Ex/Lx}}$ ).
- While on the surface languages display significant cross-linguistic variation, this variation only reflects complex, molecular concepts. Such complex concepts are composed of **universal conceptual building blocks**.

cf. Levinson (2003) on spatial reference

# Putting it together...

The concept **TIME<sub>M/E/L</sub>** appears as an emergent property  
on the higher, molecular level of human concepts.

# Putting it together...

Time does not flow on the level of conceptual building blocks, but it flows on the level of their molecular combinations – species-specific thoughts and their culture- and language-specific expressions.

## Part IV

# Semantic representation: A contextualist perspective

# Representing subjective and objective passage

We need an operator that will capture the relation between  $\text{time}_E$  and  $\text{time}_M$ .

Torrengo's (2017) ~~primitive~~ phenomenal modifier:

$$\Phi(\text{time}_M) = \text{time}_E$$

# Representing subjective and objective passage

→ two operators: the ‘objective’ for the passage of time and the ‘subjective’ for the experienced duration

SOQ (OCQ (time<sub>M</sub>)) = time<sub>E</sub>

OCQ = ‘objective covert qualifier’ (‘Time passes.’)

SOQ = subjective overt qualifier (‘Time passes slowly’; ‘Time seems to fly’)

‘covert’ and ‘overt’ refer to the online awareness

$$\text{SOQ (OCQ (time}_M\text{))} = \text{time}_E$$

?apparent inherent inconsistency

# TIME<sub>E</sub> as a complex concept

$$(\text{SOQ } (\text{OCQ } (\text{time}_M))) = \text{time}_E_{\text{belief}} = \text{TIME}_E$$

If/since TIME<sub>E</sub> is a complex concept, then we want to know its composition. Once we know it, decomposition of concepts such as PAST<sub>E</sub>, PRESENT<sub>E</sub>, FUTURE<sub>E</sub> will follow suit.

# Conceptual-semantic representation

$(SOQ(OCQ(\text{time}_M)) = \text{time}_E)_{\text{belief}} = \text{TIME}_E$

$(SOQ(OCQ(\text{time}_M)) = \text{time}_E)_{\text{belief}} = \text{ACC}_\Delta^n \vdash \Sigma$

$\text{ACC}_\Delta^{\text{rp}} \vdash \Sigma = \text{'It is acceptable to the degree } \Delta \text{ pertaining to the regular past that it is the case that } \Sigma'$

(adapted from  $\text{Acc} \vdash p$ , Grice 2001)

# Default Semantics (Jaszczolt 2005, 2010)

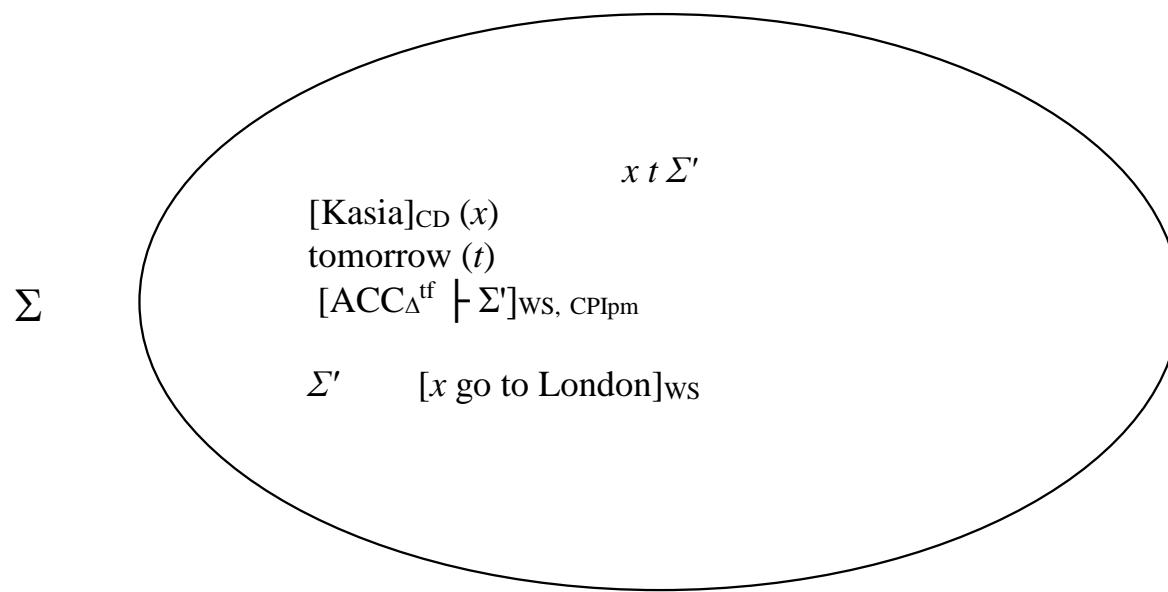
Contextualist-semantic (truth-conditional) representations collect information from the following sources and through the following processes:

# Default Semantics: Processes and sources of information

<p>processing of word meaning and sentence structure (WS)</p> <p><i>sources:</i> word meaning and sentence structure (WS)</p>	<p>conscious pragmatic inference (CPI)</p> <p><i>sources:</i> situation of discourse (SD) world knowledge (WK) stereotypes and presumptions about society and culture (SC)</p>
<p>cognitive defaults (CD)</p> <p><i>sources:</i> properties of human inferential system (IS)</p>	<p>social, cultural and world-knowledge defaults (SCWD)</p> <p><i>sources:</i> stereotypes and presumptions about society and culture (SC) world knowledge (WK)</p>

→ merger representations ( $\Sigma$ ) of *functional propositions* (Jaszczolt 2021)

# Partial $\Sigma$ for 'I go to London tomorrow.' (‘tenseless’ future, tense-time mismatch)



adapted from Jaszczolt 2009

# Examples of combinations of processes

- Hierarchy of simplicity in Hausa:

WS + CD; WS + SCWD; WS + CPI

qua aspectual marker + non-linguistic conventions

- *d<sub>1</sub>ay<sub>1</sub>''* in Thai:

CD; WS+CD; WS+CD+ SCWD; WS+CPI

qua non-linguistic conventions or modal marker + non-linguistic conventions

?

Which universal semantic/conceptual building blocks ought to be accounted for in a semantic representation if we assume lexicon/grammar/pragmatics trade-offs?

# Tensed languages with evidentials

## Matses (Panoan, Amazon region of Peru and Brazil)

## ‘Double tense’

(from Fleck 2007: 590)

ERG = ergative; DIST.PAST.INF = distant past inferential; REC.PAST.EXP = recent past experiential

# Tensed languages with evidentials

Only ‘thinking for speaking’ or conceptual-semantic composition?

Double tense in Matses: WS

*qua* e.g. DIST.PAST.INF-REC.PAST.EXP

‘Double tense equivalent’ in English (e.g. ‘The Romans built this villa.’):

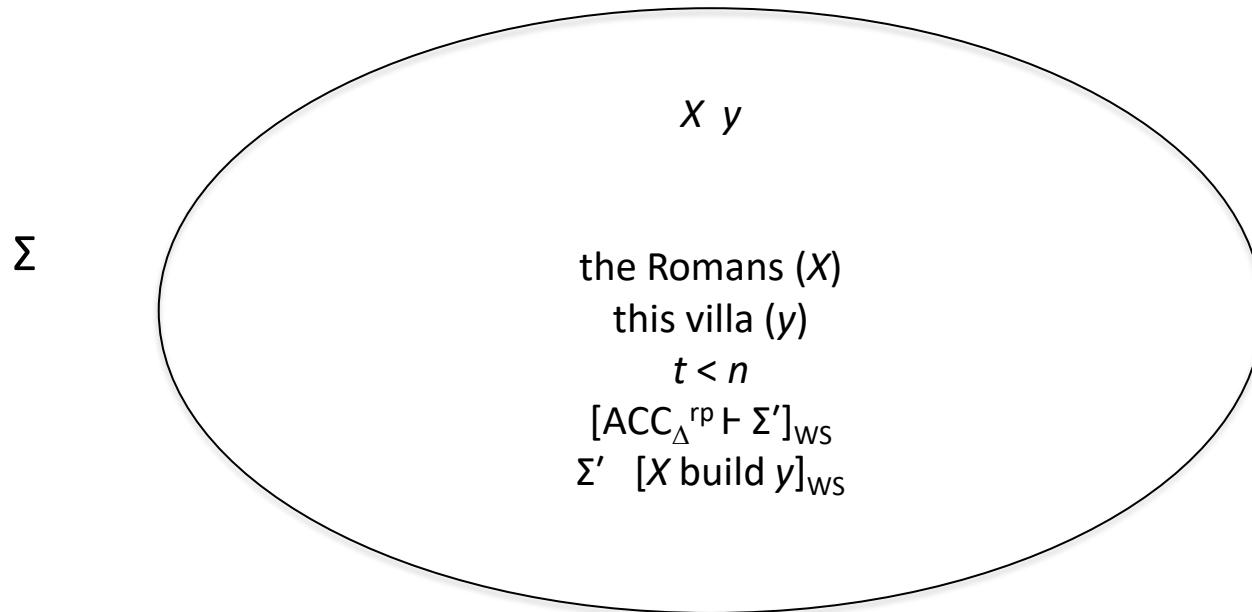
WS

WS + SCWD

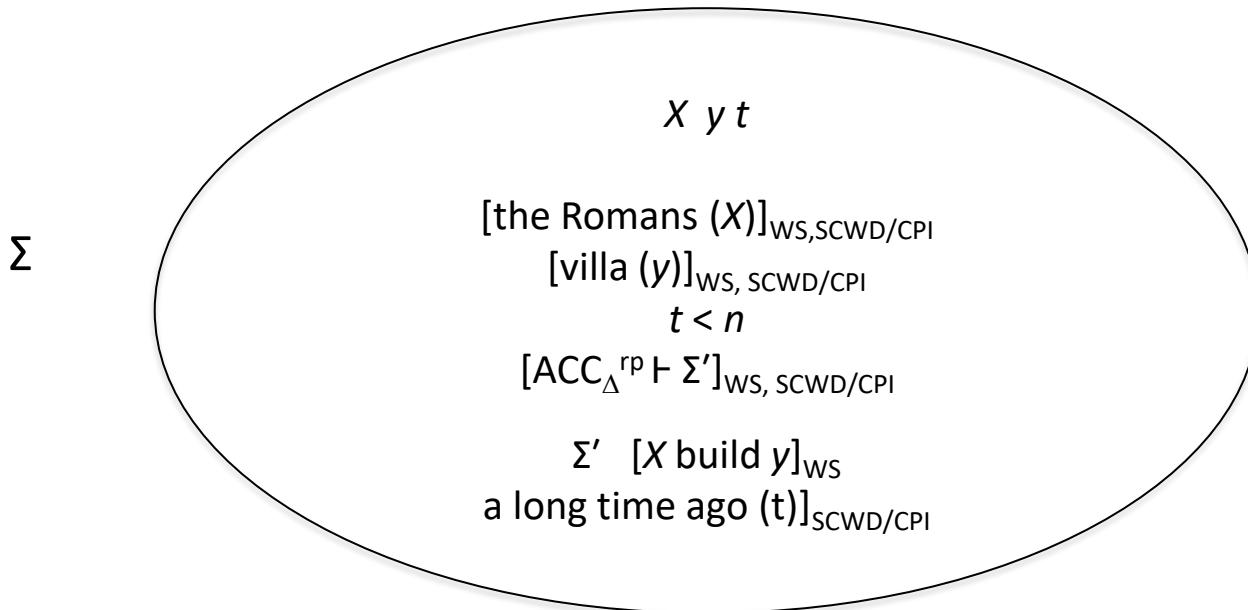
WS + CD?

WS + CPI

# Standard merger representation ( $\Sigma$ ) for ‘The Romans built this villa’



# ‘WS/SCWD/CPI trade-off’-based $\Sigma$ for ‘The Romans built this villa’



# Summing up

(1) Time flows on the emergent level of the ego-perspective and this flow is explained through a combination of interrelated explanantia:

- the emergent, metaindexical, ego-perspective
- the metarepresentational, semi-propositional nature of beliefs about time<sub>M</sub>
- dynamic\* TIME<sub>L</sub> as a complex concept, reanalysable into static conceptual building blocks pertaining to degrees of epistemic commitment (with formal representations developed in DS)

# Summing up

- (2) Universal static conceptual-semantic building blocks help explain the “apparent conflict between the familiar, flowing time of everyday experience and the static time of the Block Universe” (Ismael)

*CHRONOS: Rethinking and Communicating Time* (PID2019-108762GB-I00) funded by the Spanish Ministry of Science and Innovation  
(MCIN/AEI/10.13039/501100011033)

PI: Giuliano Torrengo

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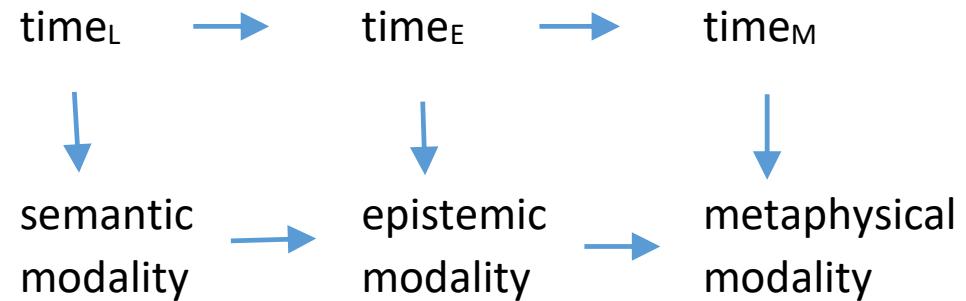
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# Horizontal and vertical reductions in the time<sub>L/E/M</sub> domains

'horizontal' reduction  
(methodological and  
(ontological assumption)

'vertical' reduction  
(modal supervenience)



from Jaszczolt 2020