

The ‘Remote Past’, ‘Recent Past’, and ‘Current Past’ of Cross-Linguistic Formal Semantic Research

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(1) The Main Character of Today’s Presentation: ‘Cross-Linguistic Formal Semantics’

Semantic research in the ‘formal’ (model-theoretic / truth-conditional) tradition, which aims to capture the (apparent) variation observed in how languages encode meaning.

(2) A Few Key Comments:

- Pretty much any formal semantic research on a phenomenon / pattern not found in English is at least *implicitly* ‘cross-linguistic’ in this sense.
- Consequently, much (maybe most?) formal semantic research nowadays is ‘cross-linguistic’ in this sense.
- *I didn’t used to be this way, though...* and **Barbara Partee**, **Emmon Bach** and **Angelika Kratzer** played a major role in driving the field towards this.

(3) Outline of This Presentation:

- a. Part 1: Brief, selective historical tour of work in ‘cross-linguistic formal semantics’
- b. Part 2:
Brief, selective tour of recent cross-linguistic formal semantic research into *tense*
 - Possible variation in the **semantics** of tense (referential vs. quantificational)
 - Possible variation in the **presence / obligatoriness** of tense

Part 1: A Highly Selective Historical Tour of ‘Cross-Linguistic Formal Semantics’

(4) Some Cross-Linguistic Formal Semantic Work (Even) in the 1970s

- a. Montague (1970) “Universal Grammar” *Theoria* 36: 373-398

“The aim of the present work is... to develop a universal syntax and semantics... This merely illustrative fragment is... perhaps sufficiently rich to indicate the manner in which various more extensive portions of natural language may be subsumed within the general framework...”

- Clearly, the goal of Montague’s enterprise was a system that could / should be applied to all human languages...
- Though not explicitly recognized, a consequence of such cross-linguistic generality would be the (implicit) characterization of cross-linguistic differences, where they arise...
 - (Though Montague himself may have felt such an interest in specifically *human* language to be ‘parochial’...)
- b. Cooper, Robin. 1975. *Montague’s Semantic Theory and Transformational Syntax*. PhD Dissertation. UMass Amherst. (with Barbara Partee, Emmon Bach, and Terry Parsons) **[Hittite Correlatives! (and first semantics dissertation from UMass)]**
- c. Siegel, Muffy. 1976. *Capturing the Adjective*. PhD Dissertation. UMass Amherst. (with Barbara Partee, Emmon Bach, and Terry Parsons) **[Russian Adjectives!]**
- d. **Johnson, Marion. 1977. *A Semantic Analysis of Kikuyu Tense and Aspect*. PhD Dissertation. Ohio State University. (with David Dowty and Arnold Zwicky)**
- e. Davis, Lawrence. 1978. *Studies in Bhartrhari’s Vakyapadiya*. PhD Dissertation. UMass Amherst (with Gareth Matthews, Terry Parsons, Barbara Partee) **[Montague Grammar fragment of Sanskrit!]**

(5) **An Important Caveat from Barbara (p.c.)**

- None of the works above are *explicitly* developing anything like a *formal typology* that *predicts* the range of observed variation (in the generative sense of ‘predicts’)
- “...the earliest goal [of formal semantic theory] was just showing that a natural language could be described using the same tools logicians used to describe their invented languages. And it was only when linguists became more actively involved in the project that attention turned to more of the linguists’ goals, including putting constraints on the theory, puzzling about psychological reality, and the goals concerning typology and universality/non-universality...”
- In this way, the work of the 1970s (and much of the 1980s) is quite different from the work of the late 80s and 1990s...

(6) **Some Notable Cross-Linguistic Formal Semantic Work in the 1980s**

- a. Stein, Mark. 1981. *Quantification in Thai*. PhD Dissertation. UMass, Amherst. (with Barbara Partee, Emmon Bach, and Ed Gettier).
- b. Gil, David. 1982. "Quantifier Scopepe, Linguistic Variation, and Natural Language Semantics." *Linguistics & Philosophy* 5(4): 421-472
 - Although Gil doesn't write within the 'Montague Grammar' framework, and a compositional semantics is not provided, this work is still informed by the broader model-theoretic / truth-conditional approach to meaning
- c. Gunji, Takao. 1983. "GPSG and Japanese Reflexivization." *Linguistics & Philosophy* 6(1): 115-156
- d. Bittner, Maria. 1987. "On the Semantics of the Greenlandic Antipassive and Related Constructions." *International Journal of American Linguistics* 53(2): 194-231
 - As with Gil (1982), this work is very much informed by the logical / model-theoretic / truth-conditional approach to meaning (though a compositional semantics is not provided)
- e. Kang, Beom-Mo. 1988. "Unbounded Reflexives." *Linguistics & Philosophy* 11(4): 415-456
- f. **Bach, Emmon, Angelika Kratzer, and Barbara Partee. 1987. "Cross-Linguistic Quantification." *NSF Funded Research Project***
 - **Associated symposia & conferences in 1988 and 1989...**

(7) **The Glorious 1990s**

The 1990s sees some of the first explicitly *typological* work in formal semantics, with the aim of predicting / explaining observed semantic variation (in the generative sense).

- A major venue for this work is the new journal, *Natural Language Semantics*...
- a. Fukushima, Kazuhiko. 1991. "Phrase Structure Grammar, Montague Semantics, and Floating Quantifiers in Japanese." *Linguistics & Philosophy* 14(6): 581-628
 - b. **1992: Founding of *Natural Language Semantics* by Irene Heim & Angelika Kratzer**
 - Becomes *the* venue for the explosion of cross-linguistic formal semantic research in the mid-late 1990s.

- c. Bittner, Maria. 1994. "Cross-Linguistic Semantics." *Linguistics & Philosophy* 17(1): 53-108
- d. Dayal, Veneeta. 1994. "Scope Marking as Indirect *Wh*-Dependency." *Natural Language Semantics* 2(2): 137-170
- e. **Bach, Emmon, Eloise Jelinek, Angelika Kratzer, Barbara Partee. 1995. *Quantification in Natural Languages*. Springer.**
 - o Languages covered include: Haisla, Kalaallisut, Warlpiri, Hindi, Navajo, Lummi, ASL...
- f. Diesing, Molly & Eloise Jelinek. 1995. "Distributing Arguments." *Natural Language Semantics* 3(2): 123-176.
- g. Ogihara, Toshiyuki. 1995. "Double-Access Sentences and Reference to States." *Natural Language Semantics* 3(2): 177-210
- h. Lasnik, Peter. 1995. *Plurality, Conjunction, Events*. Kluwer.
 - o Chapter on pluractionals has been hugely influential in the cross-linguistic formal semantic literature on pluractionality and related phenomena...
- i. Matthewson, Lisa. 1996. *Determiner Systems and Quantificational Strategies: Evidence from Salish*. PhD Dissertation. UBC.
 - o Published as a book in 1998; related papers in *Natural Language Semantics* (1999, 2001)
- j. Cheng, Lisa L.-S. and C.-T. James Huang. 1996. "Two Types of Donkey Sentences." *Natural Language Semantics* 4(2): 121-163
 - o Mainly syntactic study, but also very much informed by formal semantics
- k. Ramchand, Gillian. 1996. "Two Subject Positions in Scottish Gaelic." *Natural Language Semantics* 4(2): 165-191.
- l. Portner, Paul. 1997. "The Semantics of Mood, Complementation, and Conversational Force." *Natural Language Semantics* 5(2): 167-212.
- m. Baker, Mark and Lisa Travis. 1997. "Mood as Verbal Definiteness in a 'Tenseless' Language." *Natural Language Semantics* 5(3): 213-269
- n. Iatridou, Sabine and Spyridoula Varlokosta. 1998. "Pseudoclefts Crosslinguistically." *Natural Language Semantics* 6(1): 3-28

- o. Lahiri, Uptal. 1998. "Focus and Negative Polarity in Hindi." *Natural Language Semantics* 6(1): 57-123
- p. Singh, Mona. 1998. "On the Semantics of the Perfective Aspect." *Natural Language Semantics* 6(2): 171-199
- q. Lin, Jo-Wang. 1998. "Distributivity in Chinese and Its Implications." *Natural Language Semantics* 6(2): 201-243.
- r. Ojeda, Almerindo. 1998. "The Semantics of Collectives and Distributives in Papago." *Natural Language Semantics* 6(3): 245-270
- s. Chierchia, Gennaro. 1998. "Reference to Kinds Across Language." *Natural Language Semantics* 6(4): 339-405

In the 2000's, there is a simply exponential increase in cross-linguistic formal semantics...

(8) **Some Major Milestones in the 2000s**

- a. First Semantics of Under-represented Languages of the Americas (SULA)
 - Held 4/20/2001 – 4/22/2001 in Northampton, MA
 - Featured work on Squamish (Bar-El), Yukatek (Bohnemeyer), Passamaquoddy (Bruening), Quechua (Faller, Hastings), Navajo (Fernald), ASL (Rathman), AAE (Terry)
 - **Has been a major bi-annual event ever since!**
 - Spawned a 'sister conference' on African, Asian, Australian (and South Pacific) languages – *Triple-A* – in 2014 (held annually ever since)
- b. Matthewson, Lisa. 2004. "On the Methodology of Semantic Fieldwork." *International Journal of American Linguistics* 70: 369-415
 - Systematic presentation, explanation, and defense of elicitation methodologies in semantic fieldwork has been indispensable to the field's development
 - Sequelae include:
 - Bochnak, M. Ryan and Lisa Matthewson (2015) *Methodologies in Semantic Fieldwork*. Oxford University Press.
 - Bochnak, M. Ryan and Lisa Matthewson (2020) "Techniques in Complex Semantic Fieldwork." *Annual Review of Linguistics* 6: 261-283.

c. Formal Semantics and the Russian Fieldwork Tradition

- For centuries, linguistics in Russia has been notable for its strong tradition of fieldwork on indigenous Eurasian languages.
- Since the 2000s – **partly as a result of Partee’s annual courses on formal semantics in Moscow** – scholars in this tradition have incorporated more and more ideas from formal semantic theory (Tatevosov 2002, 2005, *et multa alia*)

(9) **A Very Biased and Selective Overview of Some of the Major Results of This Work**

a. Uncovered aspects of cross-linguistic variation that had never been imagined by linguists or philosopher/logicians, *until they started working together...*

- E.g., the encoding of ‘*de se*’ attitudes, the semantics of modal operators

b. Clear formulation and elucidation of how to uncover and analyze semantic variation, when it arises.

- Davis, Henry, Carrie Gillon, and Lisa Matthewson. 2014. “How to Investigate Linguistic Diversity: Lessons from the Pacific Northwest.” *Language* 90(4): 180-226.

c. **Broad range of semantic phenomena and topics examined from a cross-linguistic / typological perspective (though it could always be broader)**

- Comparatives and degree constructions (Hohaus & Bochnak 2020)
- Nominals and nominal quantification (Dayal & Sağ 2020)
- ‘*De se*’, perspective, indexical shift (Charneval 2021, Sundaresan 2021)
- Plurality, number, pluractionality (Farkas & de Swart 2010, Henderson 2017)
- Mood, modality, and evidentials (Močnik & Abramovitz 2019, Murray 2021)
- Focus, focus sensitivity, focus constructions (Howell *et al.* 2021)
- Tense and aspect (**See below**, and Arregui *et al.* 2014, Altshuler 2014)

Part 2: A Highly Selective Peek at Cross-Linguistic Semantic Variation in Tense

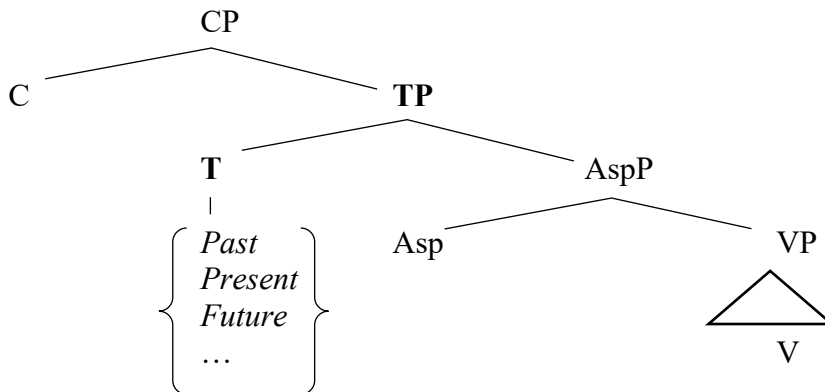
2.1 Some Background Ideas and Assumption Regarding ‘Tense’ Across Languages

- (10) a. Question: What is ‘tense’ (for semanticists)?
 b. Answer: Tense is a *grammatical / functional category*, whose meaning indicates the position of some *topical* interval of time (Topic Time)

(11) Some (Disputable, But Common) Syntactic Assumptions about Tense

Morpho-syntactically, tense features (e.g., ‘Past’, ‘Present’, ‘Future’) are realized by T(ense)-heads, which project Tense Phrases (TPs)

- Typically, these TPs are part of the functional projection of the verb, above (any) Aspectual Phrase (AspP), and below (any) Complementizer Phrase (CP)



(12) Some Assumptions About Semantic Interpretation

- a. Semantic interpretation is always relative to an ‘*evaluation world*’ (the universe an utterance is made in) and an ‘*evaluation time*’ (the time an utterance is made, UT)

$[[XP]]^{w,t}$ = the extension / denotation of XP at world w and time t

- b. Semantic interpretation is also relative to a ‘*variable assignment*’ (g), an association between pronominal indices and their referents.

$[[he_3]]^{w,t,g}$ = $g(3)$ = Bill

With all this as background, here are a few major questions regarding tense that have driven research over the past 40 years...

(13) **Some Big Questions Surrounding the Semantics of Tense (Across Languages)**

- a. How do languages differ in terms of the semantics of T(ense)-heads?
- Do T-heads directly *refer* to a ‘Topic Time’ (like pronominal ‘*then*’)?
 - Do T-heads *quantify* over times (like indefinite ‘*some time*’)?
- b. How do languages differ in terms of the syntactic projection of T-heads?
- Are there languages *without* T-heads in their main clauses?
 - Are there languages where T-heads are purely optional in main clauses?
- c. How do languages differ in terms of the features on T-heads?
- Are there tense features beyond mere ‘past’, ‘present’, and ‘future’?

Work on ‘Graded Tenses’

Hayashi 2011
Cable 2013
Klecha & Bochnak 2016
Mucha 2017
Johnson 2019b

Work on ‘Evidential Tenses’

Faller 2004
Chung 2007
Lee 2013
Smirnova 2013
Arregui *et al.* 2017
Johnson 2019a

- d. How do languages differ in terms of the morpho-syntactic distribution of T-heads?
- Are there languages where T-heads can be projected by *nouns*?

Recent Key Work:

Tonhauser 2007, Thomas 2014, Adamou & Haendler 2020

In the following sections, I’ll take an **extremely biased** tour of some of what’s been recently uncovered / argued regarding (13a) and (13b)...

- (... even though (13c) is the basis for the title of this talk...)

2.2 The Semantics of Tense-Heads: Referential, or Quantificational, or *Either*?

Building upon work in ‘tense logic’, Montague (1973) viewed tenses as introducing *existential quantification over times*...

(14) Early, Quantificational Semantics for Tense

$[[\text{I turned off the stove}]]^{\text{w,t,g}} = \text{T}$ iff $\exists \text{t}' . \text{t}' < \text{t}$ & the speaker turned off the stove at t'

(15) Barbara Partee Forgets to Turn Off Her Stove

Partee (1973) famously observed that this semantics makes wrong predictions regarding the interactions between tense and negation!

a. Scenario:

Speaker has made some cookies, and is driving them over to a friend’s house. In the car, they realize that they left the stove on.

b. Sentence: I didn’t turn off the stove!

c. Predicted Meanings from Quantificational Semantics (16):

(i) $\exists \text{t}' . \text{t}' < \text{t}$ & **NOT**(the speaker turned off the stove at t')

○ **TOO WEAK:**

Made true by the time t' where the speaker started her car

(ii) **NOT**($\exists \text{t}' . \text{t}' < \text{t}$ & the speaker turned off the stove at t')

○ **TOO STRONG:**

Says there is no time in the past where the speaker turned off the stove

(16) Partee’s Proposal: Tenses Can be Referential, Like Pronouns

- Like temporal pronouns (*then*), T-heads bear indices, and get their reference from the variable assignment g

a. Semantics for Past Tense: $[[\text{T-PAST}_4]]^{\text{w,t,g}} = \mathbf{g(4)}$, defined only if $g(4) < \text{t}$

b. Illustrative Example:

$[[\text{I T-PAST}_4 \text{ turn off the stove}]]^{\text{w,t,g}} = \text{T}$ iff

The speaker did not turn off the stove at (past) time $g(4)$

[In scenario (15a), $g(4)$ = the past time when the speaker took the cookies out]

(17) **Further Predictions: Other ‘Pronominal’ Behaviors of Tense (Partee 1973)**

a. Anaphoric Uses:

(i) *Pronominal Anaphora:*

Dave walked in. **He**₁ sat down.

$$\circ \quad [[\text{he}_1]]^{\text{w,t,g}} = g(1) = \text{Dave}$$

(ii) *Anaphora with Tense(?)*

Dave T-PAST walk in. He **T-PAST**₁ sat down.

$$\circ \quad [[\text{T-PAST}_1]]^{\text{w,t,g}} = g(1) = \text{time Dave sat down}$$

b. Bound Uses:

(i) *Bound Pronouns:*

1. Sentence: [Every boy]₁ loves [**his**₁ mother]

2. Meaning: $\forall x . x \text{ is a boy} \rightarrow x \text{ loves } x' \text{ mother}$

(ii) *Bound Tenses(?):*

1. Sentence: [Whenever it rained]₁ [Dave **T-PAST**₁ cried]

2. Meaning: $\forall t' . \text{It rained at } t' \ \& \ t' < t \rightarrow \text{Dave cried at } t'$

(18) **Brief Summary of Debate Over ‘Pronominal’ vs. ‘Quantificational’ Tense in English**

- Others found ways of capturing the facts in (15)-(17) within a quantificational approach to (English) tense after all...
- There are certain facts about English tense that are (allegedly) captured better under a quantificational approach to tense...
 - But those facts also have accounts under ‘pronominal’ approaches to English tense...
- More recently, Grønn & von Stechow (2016) argue that tense in English might be *ambiguous* between a ‘pronominal’ and a ‘quantificational’ interpretation...

(19) **Questions About the Semantics of Tense Across Languages**

- a. Are there languages where T-heads are (clearly) quantificational, rather than pronominal?
- b. Are there languages where T-heads are (clearly) pronominal, rather than quantificational?

(20) **Past Tense in Hebrew vs. in Japanese (Ogihara & Sharvit 2012, Sharvit 2014)**

In order to capture the differing behavior of *embedded* past tense in Hebrew vs. Japanese, Ogihara & Sharvit (2012) and Sharvit (2014) argue...

- a. Past tense in Hebrew must be pronominal
- b. Past tense in Japanese must be quantificational
 - (Though Japanese past tense might also be ambiguous)

- The arguments put forth by Ogihara & Sharvit (2012) and Sharvit (2014) center on the semantics of tense in *embedded clauses*...
- Looking just at *main clauses*, it is generally hard to find clear evidence for / against either a pronominal or a quantificational semantics for tense...
- **However, Chen *et al.* (2020) argue that main clauses in Javanese and Atayal provide some striking indicate that past tense in these languages is *quantificational***

(21) **Quantificational Past in Javanese: Interactions with Negation (Chen *et al.* 2020)**

Unlike in English (15), negated past-tense sentences of Javanese *do* show the ‘scopal’ interactions between negation and past predicted by a quantificational semantics!

- a. Wong londo **gak tau** mangan sego
person western **NEG PAST** eat rice
Foreigners have never eaten rice.
NOT($\exists t' . t' < t$ & foreigners ate rice at t')
- b. Pak Wanan **tau gak** mangan sego
Mr. Wanan **PAST NEG** eat rice
There have been times when Mr. Wanan did not eat rice.
 $\exists t' . t' < t$ & NOT(Mr. Wanan ate rice at t')

- Similar facts are reported for Atayal by Chen *et al.* (2020)

(22) **Quantificational Past in Javanese: No Deictic / Referential Uses (Chen *et al.* 2020)**

Unlike in English (16), past-tense sentences in Javanese cannot be understood to refer to some contextually salient, topical time.

a. Scenario: Speaker has made some cookies, and is driving them over to a friend's house. In the car, they realize that they left the stove on.

b. Sentence:

aku kok run **tau** mateni kompor yo!
I PRT not.yet **PAST** turn-off stove yes
(#) *I didn't turn off the stove.*

- Similar facts are reported for Atayal by Chen *et al.* (2020)

(23) **Quantificational Past in Javanese: No Anaphoric Uses (Chen *et al.* 2020)**

Unlike in English (17a), past-tense sentences in Javanese cannot be understood to refer to a time introduced by some previous sentence.

a. Aku **tau** numpak pesawat neng Jakarta...
I **PAST** ride airplane to Jakarta
I (once) took an airplane to Jakarta

b. # Mari ngono aku **tau** numpak taksi reng hotel
finish like.that I **PAST** ride taxi to hotel
Then, I took a taxi to the hotel.

Instead, *like an indefinite*, past-tense in Javanese can only introduce new past-times into the discourse.

c. (i) Context: No previous discourse. You are beginning a story.

(ii) Sentence: Paspor-ku **tau** ilang.
Passport-my **PAST** lost
(Once), my passport was lost.

- Similar facts are reported for Atayal by Chen *et al.* (2020)

(24) **Quantificational Past in Javanese: No Bound Uses (Chen *et al.* 2020)**

Unlike in English (17b), past-tense sentences in Javanese cannot be understood as 'quantificationally bound' by some temporal quantifier.

Sa'ben bu Dur mlaku-mlaku, dheke **tau** ketemu dhifa.
every Mrs. Dur RED-walk she **PAST** meet Dhifa
(#) *Every time Mrs. Dur went for a walk, she met Dhifa.*

- Similar facts are reported for Atayal by Chen *et al.* (2020)

(25) **Conclusion (Chen *et al.* 2020):**

The past-tense marker **tau** in Javanese (and the unrelated infix **-in-** in Atayal) are *not* pronominal tenses, as in (16)!

- a. Natural Question: Could these markers instead be *aspects*, like ‘perfect’?
- b. Chen *et al.*’s Answer:
No. A variety of facts indicate that these markers *are indeed* T(ense)-Heads (and are not aspects like ‘perfect’)
- c. Major Conclusion:
The past markers in Javanese and Atayal are *existential* tenses, as in (14)

(26) **Possible Lesson from Chen *et al.* 2020**

- Whether tenses receive a ‘pronominal’ or a ‘quantificational’ semantics may be a point of cross-linguistic variation.
- There do seem to be some languages where, even in main clauses, it can be seen that tenses (can) receive a ‘quantificational’ interpretation.

CAVEAT:

Even in languages that have been argued to have ‘quantificational tenses’, there are also (allegedly) T(ense)-heads that receive a pronominal / referential interpretation.

- This ambiguity is argued for Japanese by Ogiwara & Sharvit (2012)
- This duality is also argued by Chen *et al.* (2020) to arise in Javanese and Atayal
 - (However, seeing it there requires us to first talk about ‘tenselessness’)

2.3 The Projection of Tense-Heads: Can Languages Be (Deeply) ‘Tenseless’?

(27) **Languages Allowing ‘Tenseless’ Main Clauses**

A great many languages across the world allow main clauses to lack *any* tense marking at all. Generally, such sentences are relatively ‘open’ in terms of when the event/state occurs.

Illustration: St’át’imcets (Matthewson 2006):

táyt-kan
hungry-1sgS
I am hungry OR *I was hungry*

(31) **A Complicating Factor: ‘Tenseless’ Main Clauses that Freely Refer to Future Events**
While the pattern in (29) is common, *not every language seems to exhibit it.*

- a. Javanese (Vander Klok & Matthewson 2015):
wingi / **saiki** / **sesok** ewoh opo?
yesterday **now** **tomorrow** busy what
 ‘What {were / are / will } you be doing { yesterday / now / tomorrow }?’
- b. Washow (Bochnak 2016):
 Hut’ajahé:š ʔumdó:daʔi **dewp’áwit** démlulewe?
 what 2sgS-make **evening** dinner.for
 What will you make for dinner **tonight?**

(32) **Question Raised by Pattern in (31) (Chen *et al.* 2020)**

What is the best / most plausible way of capturing the variation between (29) and (31)?

- a. Variation in the semantics of phonologically empty tense-head?
- (i) St’át’imcets: $[[T_{\text{NON-FUTURE 2}}]]$ ^{w,t,g} = g(2), defined only if $g(2) \leq t$
- (ii) Javanese: $[[T_2]]$ ^{w,t,g} = g(2)
- b. *Variation in pragmatic principles of temporal reference (30b)?*

As pointed out by Chen *et al.* (2020), some support for (32a) might come from the special ‘discontinuity effects’ found with *past-tense* in these languages...

(33) **Optional Past Markers and ‘Discontinuity Effects’ (Cable 2017)**

- In many (all?) languages allowing main clauses without tense marking, there is the option of using a marker that *forces* a past-tense interpretation.

- a. Tlingit (Cable 2017): **kuk’éiyen** **tatgé** / ***yeedát**
 be.nice.weather.PAST **yesterday** **now**

- However, when these optional past-markers are used, there is widely reported to be a strong implication that the event/state in question *no longer holds*

- b. (i) English: The weather **was** nice this morning, and **it is still nice now.**
- (ii) Tlingit (Cable 2017):
 Yá ts’ootaat ch’a **kuk’éiyen.** ***Ch’a yeisú kwak’éi.**
 this morning just be.nice.weather.PAST just still be.nice.weather

(34) **‘Discontinuous Past’ or Simply a Pragmatic Effect?**

- This difference between *obligatory* past tense (in English (33bi)) and *optional* past tense (in Tlingit (33bii)) has been claimed to show that the latter is a distinct tense category...
 - That is, the past-marker in Tlingit (33a) isn’t simply a ‘past tense’ (as in English), but instead a **‘discontinuous past’** (Plungian & van der Auwera 2006)
- However, Cable (2017) observes that this ‘discontinuity inference’ is not really part of the inherent, lexicalized meaning of these optional past markers...
 - These ‘discontinuity inferences’ *can* be defeated in certain contexts:

Cancelling ‘Discontinuity Inferences’ with Statements of Ignorance (Cable 2017):

- a. *Context:* Joe – “When I was in Sitka, I saw John.”
Sue – “Oh! Is John in Sitka?”
- b. *Response:* Áa yéi teeyín. Tlél xwasakú ch’a yeisú yéi teeyí.
there 3S.be.PAST NEG 1sgS.know just still 3S.be.SUB
‘Well, he **was** there. I don’t know if he’s still there.’

- **Parallel ‘discontinuity effects’ – as well as their contextual cancellation – are reported by Bochnak (2016) and Chen et al. (2020).**

(35) **‘Discontinuity Inferences’ and Phonologically Null Tenses (Cable 2017)**

Cable (2017) develops a theory of the ‘discontinuity inferences’ in (33) that relies upon the ‘tenseless’ main clauses containing a phonologically empty T(ense)-head.

- In languages like Tlingit, ‘tense’ is not *optional*. Rather, there is a choice between (ii) phonologically expressed past-tense, and (i) phonologically empty non-future.

a. The Tense-Heads of Tlingit:

- (i) *Non-Future:* $[[\emptyset_2]]^{w,t,g} = g(2)$, defined only if $g(2) \leq t$
(ii) *Past:* $[[-een_2]]^{w,t,g} = g(2)$, defined only if $g(2) < t$

- (Summarizing briefly) The **pragmatic competition** between these two T-heads is what leads to the ‘discontinuity inferences’ like (33b), as well as the contexts where they can be defeated (34)

(36) **Chen *et al.* (2020)'s Argument:**

- Cable's (2017) account seems to work well for many languages that appear to have 'tenseless' main clauses and 'discontinuous past' markers...
- **However, this line of analysis really requires that there be a phonologically empty T-head in those (superficially) 'tenseless' main clauses (35ai)**
 - It doesn't seem to be possible to recast this theory of 'discontinuity effects' with past marking, in a system where 'tenseless' main clauses really lack T-heads
- **Thus, this approach to 'discontinuous past' provides some further support for the claim that, even in languages where main clauses can lack (overt) tense marking, there are still T(ense)-Heads and TPs at a more abstract (unpronounced) level...**

(37) **Some Further Related Developments: Existential Tense, *Redux***

- Bochnak (2016) notes that Cable's (2017) semantics in (35a) isn't quite right...
 - A pronominal semantics for both '*Non-Future*' and '*Past*' will wrongly predict that only (overt) '*Past*' can describe past events (Maximize Presupposition)
- Chen *et al.* (2020), however, observe that this problem is avoided if '*Past*' in these languages has a **quantificational semantics** (*Section 2.2*)
- Thus, these 'discontinuity effects' seen with 'optional past' may also be an indication that (past) tense in these languages can **quantificational!**

3. **Summary: A Few Highlights Regarding Cross-Linguistic Variation in Tense**

(38) **Referential vs. Quantificational Semantics:**

Languages do seem to vary in whether (past) tense marking exhibits the properties expected of **referential (pronominal)** or **quantificational** semantics. *However...*

- (i) We shouldn't close the door to the possibility that tense is *always* pronominal (or quantificational) across languages, and that the observed differences are actually due to other factors...
- (ii) To my knowledge, every language claimed to have a quantificational (past) tense is also claimed to either:
 1. Allow a referential reading of that tense too (Ogihara&Shavrit 2012)
 2. Possess other tense markers that are referential (Chen *et al.* 2020)

(39) **Tenseless Main Clauses**

As has long been known, languages vary in whether main clauses must bear (overt) tense marking. *However...*

- (i) Language vary in how such (apparently) ‘tenseless’ main clauses can be interpreted. And there is disagreement over whether this variation is best captured by:
 - 1. Variation in the semantics of a phonologically empty T(ense)-head
 - 2. Variation in the pragmatic strategies for construing tenseless clauses
- (ii) Analysis of the special ‘discontinuity’ inferences observed with (optional) past markers in these languages has (to date) relied upon the assumption that seemingly ‘tenseless’ main clauses do have (unpronounced) T-heads.

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