1. **Introduction: Tense**

- **Informal definition of tense:**

  (1) Tense $\overset{\text{Def}}{=} \text{the grammaticalization of location in time (Comrie 1985)}$

  (2) $\begin{array}{ccc}
  \text{physical flow of time} \\
  \text{before} \quad \uparrow \quad \text{after}
  \end{array}$

  utterance time $t_0$

- **Issues in describing tense systems (cf. Comrie 1985, Matthewson 2005):**

  (3) a. E = event time (the time at which the reported event takes place)
      b. S = speech time (the time at which the sentence is uttered)
      c. R = reference time (the time that serves as reference point for the reported event)

  i. **Temporal relations**

     ANTERIORITY (past), SIMULTANEITY (present), POSTERIORITY (future)

  ii. **Deixis** (point of reference) (cf. also Reichenbach 1947):

     - **absolute tense:** reference time $=$ speech time ($R = S$)

       (4) a. past: $E < S(=R)$ \quad \text{I lived in NY city.}
       b. present: $E = S(=R)$ \quad \text{I live in NY city.}
       c. future: $S(=R) < E$ \quad \text{I will live in NY city.}

     - **relative tense:** reference time $\neq$ speech time

       (5) a. pluperfect: $E < R < S$ \quad \text{I had lived in NY city, when…}
       b. future perfect: $S,E < R$

  iii. **Distance** (from point of reference): very far, far, close

- **Absolute tense systems in natural language**

  i. tripartite systems (past, present, future): English (cf.4), Lithuanian

     $\Rightarrow$ cross-linguistically not very common (Chung & Timberlake 1985: 204)

  ii. bipartite systems:

     - **past vs. non-past:** Yidiŋ (Dixon 1977, Chung & Timberlake 1985: 205)
     - **future vs. non-future:** Hua (Haiman 1980, Comrie 1985: 46), Takelma (Chung & Timberlake 1985: 204)

     $\Rightarrow$ bipartite systems involving present vs. non-present seem to be universally absent !!!

     (Comrie 1985)
NB: Some languages do not seem to make a tense distinction between *future* and *non-future*, but a *mood* distinction between *realis* and *irrealis*; e.g. Dyirbal (, Dixon 1972, Comrie 1985: 49)

- *realis*: episodic sentences referring to past and present events
- *irrealis*: hypothetical sentences referring to non-actual events in conditionals, optatives, imperatives, future etc.

*Diagnostic*: Use of a specific marker is not restricted to reported events in the future, but shows up in other environments as well: optatives, hortatives, imperatives, conditional clauses, etc. (see Matthewson 2005 for discussion)

2. **A brief note on aspect**

- *Temporal/Aspectual system in Klein (1994):*

  1. ET: The time at which the relevant event takes place.
  2. UT: The time the sentence is uttered.
  3. RT: The time about which a claim is made.

     i. *Tense* = relation between RT and UT
     ii. *Aspect* = relation between ET and RT

  4. (7) I saw Mabel last week
     i. RT < UT → past
     ii. ET ⊂ RT → perfective (absence of progressive form)

  5. (8) A: What did you notice when you looked into the room?
     B: The light was flickering.          (adapted from Klein 1994)
     i. RT < UT → past
     ii. RT ⊂ ET → progressive

     RT: the time at which B looked into the room (e.g., 9pm yesterday)
     ET: the time at which the light was flickering (e.g., from 8 – 11pm yesterday)

- *Cross-linguistic variation: tense vs. Aspect languages*

  Languages differ with regard to which semantic dimensions (tense, aspect, tense and aspect) they grammatically encode in form of special morphemes, auxiliaries etc.

  i. *tense/aspect languages* (e.g. English, Russian): mark both
  ii. *tense languages* (e.g. Standard German): mark only/ mainly tense
  iii. *aspect languages* (e.g. Hausa, many African languages): mark only/ mainly aspect

  6. (9) Musa ya-nàa tàfiyàa.          (Hausa, Chadic)
     Musa 3sg.m-PROG going.away
     'Musa is/ was travelling.'
3. The semantic contribution of tense morphemes

3.1 Tense as an existential quantifier

- Tense morpheme contributes an existential quantifier over time (interval)s and locates a tensed proposition in time.

(10) a. \([\text{past}] = \lambda_{p,c,i,d.} \exists t [ t < t_0 \land p(t)]\)
b. \([\text{present}] = \lambda_{p,c,i,d.} \exists t [ t_0 \subseteq t \land p(t)]\)
c. \([\text{future}] = \lambda_{p,c,i,d.} \exists t [ t > t_0 \land p(t)]\)

(11) a. John saw Mary.
b. \([\text{past}(\text{John see Mary})]\)
c. \([\lambda_{p,c,i,d.} \exists t [ t < t_0 \land p(t)] (\lambda t. \text{see’}(\text{john}, \text{mary}, t))\]
d. \(\exists t [ t < t_0 \land \text{see’}(\text{john}, \text{mary}, t)]\)
e. \(1 \text{ iff there is a time } t \text{ before the time of utterance } t_0, \text{ such that the proposition ‘John sees Mary’ is true at } t.\)

- Problem for the quantifier account: negative past sentences (Partee 1972)
  The quantifier account cannot account for the interpretation of (11)

(12) I didn’t turn off the stove. (uttered somewhere on the turn-pike)
i. There is no past time t such that I turned off the stove at t. \(\rightarrow\) false
ii. There is a past time t such that I did not turn off the stove at t \(\rightarrow\) trivially true

(13) I did not turn off the stove at a specific (contextually-specified) time t in the past
  \(\rightarrow\) tense = pronouns (Partee 1972)

3.2 Tense = Proform (Partee 1972, Kratzer 1998, Matthewson 2005)

The tense morpheme contributes a context-dependent variable over time intervals and a presupposition to the semantic derivation. The variable corresponds to the reference time. The presupposition determines the location of the relevant time interval relative to the utterance time \(t_0.\)

(14) \([\text{PAST.}]^g = g(i), \text{ defined iff } g(C) < t_0 \text{ (the utterance time)}\)

(15) a. Mary walked.
b. \(\text{TP}
\text{T} \quad \text{AspP}
\text{PASTi} \quad \text{Asp} \quad \text{VoiceP}
\text{PERF} \quad \text{Mary walk}\)
c. \([[[TP]]^{BC} = \lambda w. \lambda e [\text{walk}(e)(w) \& \text{agent}(\text{Mary})(e)(w) \& \tau(e) \subseteq g(i)] \) (where \(g(i) < tc\)).

d. There is an event \(e\) of Mary walking, whose running time \(\tau\) is included in the contextually salient past time \(g(i)\).

4. Tense in a superficially tenseless language: St’át’ímcets (Matthewson 2005)

4.1 Observations

i. superficially tenseless clauses (STCs) receive either a past tense or a present tense interpretation:

\begin{align*}
\text{(16)} \\
\text{a. } & \text{táyt-kan} & \text{b. } & \text{k’ác-an’-lhkan} \\
\text{hungry-1SG.SUBJ} & \text{dry-DIR-1SG.SUBJ} \\
\text{‘I was hungry / I am hungry.’} & \text{‘I dried it / I am drying it.’}
\end{align*}

ii. temporal reference can be restricted by overt temporal adverbials

\begin{align*}
\text{(17)} \\
\text{a. } & \text{táyt-kan} & \text{b. } & \text{k’ác-an’-lhkan} \\
\text{hungry-1SG.SUBJ} & \text{dry-DIR-1SG.SUBJ} & \text{i-nátcw-as} & \text{COMP.PAST-one.day.away-3CONJ} \\
\text{‘I am hungry now.’} & \text{‘I dried it yesterday.’}
\end{align*}

iii. STCs can never refer to future events: incompatibility with future adverbials

\begin{align*}
\text{(18)} \\
\text{a. } & \text{* táyt-kan} & \text{b. } & \text{* k’ác-an’-lhkan} \\
\text{hungry-1SG.SUBJ} & \text{dry-DIR-1SG.SUBJ} & \text{natcw / zánucwem} & \text{one.day.away / next.year} \\
\text{‘I will be hungry tomorrow / next year.’} & \text{‘I will dry it tomorrow / next year.’}
\end{align*}

iv. For a future-time interpretation, the enclitic \(kélh\) is required (see 4.3)

\begin{align*}
\text{(19)} \\
\text{a. } & \text{táyt-kan} & \text{b. } & \text{* k’ác-an’-lhkan} \\
\text{hungry-1SG.SUBJ} & \text{dry-DIR-1SG.SUBJ} & \text{kelh} & \text{kelh} \\
\text{‘* I was hungry / * I am hungry / I will be hungry.’}
\end{align*}

- Conclusion:
The morphologically unmarked STC-form is not fully underspecified with respect to tense, for it cannot refer to future eventualities.

4.2 Analysis

- STCs contain a phonologically null tense morpheme, \textsc{tense}. \textsc{tense} introduces a variable over time intervals (the reference time), which receives its value from the contextually determined assignment function. The lexical entry of \textsc{tense} in (20) restricts possible values for the reference time to being non-future (by way of a presupposition):

\begin{align*}
\text{(20)} \\
\text{[[ TENSEi ]]^{BC} = g(i), defined iff } \text{g(i)} < \text{tc or } \text{g(i)} \circ \text{tc.}
\end{align*}
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(21) matq [kw s-Mary]
    walk [DET NOM-Mary]
    ‘Mary walked / Mary is walking.’

(22) a. TP
    / \    
    T AspP
    | / \    
    TENSE Asp VoiceP
    | / \    
    PERF matq kw sMary

b. [[ (22a) ]\ g.c = \w. \e \ [walk(e)(w) & agent(Mary)(e)(w) & \tau(e) \subseteq g(i)]]
   (where g(i) < tc or g(i) \ o tc).

c. There is an event e of Mary walking, whose running time \(\tau\)is included in the
   contextually salient past or present time g(i).

• There aren’t two different null morphemes for past and present, respectively, in
  St´át´imcets, but only one null morpheme underspecified for past and present:

   ⇒ *STC-clauses can refer to past and present tense at the same time!*

(23) Context: Your white friends Theresa, Charlie and Marie got drunk at the bar. You are
    looking after them because you don’t drink. Theresa threw up at 10pm; Marie hasn’t
    thrown up at all. Just as Charlie is in the process of throwing up, another friend calls and
    asks (a); you can answer with (b):

   a. wat’k’ ha i snek’wnuk’wa7-lhkálh-a
      vomit YNQ DET.PL friend(PL)-1PL.POSS-DET
      Literally: ‘Our friends throw up?’

   b. wat’k’ kw s-Theresa múta7 s-Charlie
      vomit DET NOM-Theresa and NOM-Charlie
      ‘Theresa and Charlie threw up / are throwing up.’

4.3 The special status of the future marker -kelh

• -kelh is not an *irrealis* marker:

   i. It does not occur in *non-future irrealis* contexts, such as conditionals, counterfactuals,
      imperatives, futures, questions, negatives, obligations, desideratives, potentials,
      warnings, … (see end of section 1), but has obligatory future import:

   (24) 7aoz kelh kw-s ít’-em kw s-Henry
        NEG kelh DET-NOM sing-MID DET NOM-Henry
        ‘Henry may not sing,’ / * ‘Henry isn’t singing.’ / * Henry didn’t sing.

   (25) ít’-em há kelh s-Tammy
        sing-MID YNQ kelh NOM-Tammy
        ‘Is Tammy going to sing / Will Tammy sing?’ (only readings)
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(26) lh-smem’lhats-ás ka kelh ku n-skwékwza7, (conditional)
    COMP-woman(DIMIN)-3CONJ IRR kelh DET 1SG.POSS-offspring(DIMIN)

    nah-en-lhkán ka ku Philomena
    name-DIR-1SG.SUBJ IRR DET Philomena

‘If I had a daughter, I would call her Philomena.’ (volunteered gloss)

ii. -kelh cannot occur in imperatives:

(27) sima7-cí(t)-ts (*kelh) ta lasál-a
    come.here-IND-1SG.OBJ kelh DET salt-DET

‘Hand me the salt.’

• -kelh is not an epistemic modal meaning ‘might’. It does not express epistemic modality in past or present tense, but always has future import:

(28) Situation: Your friend asks you how many fish were in the net this morning, and you aren’t quite sure of the number, but you know approximately. You say ‘It might have been five.’

a. tsétsl’ekst k’a sxe
   five(animal) APPAR perhaps
   ‘It might have been five.’ (volunteered form)

b. tsétsl’ekst k’a kelh
   five(animal) APPAR kelh
   ‘It might be five.’ (future reading only)

Consultant’s comment: “You might get five … because you’ve been getting five, you might get five again.”

• kelh seems to act in all aspects of its interpretation like English (temporal) will/would. It gives future readings in simple sentences, yet allows would readings just as English does, e.g. when embedded under a past matrix clause. It disallows simultaneous future readings, and shifts forward the evaluation time of a clause embedded under it.

(29) tsut tu7 kw s-Susan i ánwas-as xetspásq’et lhel
    say tu7 DET NOM-Susan COMP.PAST two-3CONJ week from
    lhkúnsa [kw-s lhwál-en-as kelh ta kwtámts-s-a
    now [DET-NOM leave-DIR-3ERG kelh DET husband-3SG.POSS-DET
    l-ku pálæ7xetspásq’et]
in-DET one l-week]

‘Susan said two weeks ago that she’ll leave her husband in one week from now / would leave him one week from then.’

• -kelh is not an irrealis, nor a tense marker, but corresponds to the English modal operator WOLL (Abusch 1985, 1988): -kelh combines with the tense morpheme, which picks out a past or present reference time. This will enable sentences containing kelh to receive either will- or would- readings.

(30) \[ [[ \text{WOLL} ]] = \lambda P \in D_{<t,\omega>}. \lambda t . \lambda w . \exists t' [t < t' & P(t')(w) = 1] \]
- *kelh behaves like other St'át'imcets modals in that it has not specified quantificational force, and can be rendered as *may or *must.

⇒ **Cross-linguistic variation:**

- **English:** modals tend to have a specified quantificational force (universal or existential), but leave the conversational background up to context (Kratzer 1991).
- **St'át'imcets:** modals have no inherently specified quantificational force, and thus allow both necessity and possibility interpretations, but conversely lexically specify the conversational background.

**Conclusion:**

St'át'imcets has no future tense marker, but only a modal operator (with future import) that combines with the tense morpheme), see Enc (1996) and many others on the modal status of so-called ‘future’ *will* in English.

4.4 **Conclusion**

St'át'imcets possesses only one tense morpheme, TENSE, which picks out a past or present reference time. This morpheme may co-occur with a morpheme instantiating the (modal) temporal ordering predicate WOLL.

5. **Semantic Variation: Case Studies**

5.1 **Micro-variation: St’át’imcets vs. English**

- **English:** tense morphemes overt, different specifications for past and present
- **St’át’imcets:** only one covert tense morpheme that is underspecified for past-present

⇒ Language variation due to feature content of a functional element (Fukui 1988)

- **Parallels between St’át’imcets and English:**
  - future morpheme shifts temporal reference in embedded clauses;
  - future morpheme allows for *will* - and *would*-interpretation.

5.2 **Macro-variation: Other tenseless languages**

- **Chinese** (Lin 2005):
  - no separate tense morpheme (no T-projection)
  - tense interpretation derived either (i.) from default aspectual interpretation (corresponding to the VP-aspect: e.g. telic predicate → imperfective → present), or (ii.) from the lexical specification of overt aspectual markers (perfectivity markers *guo* and *le* encode a temporal precedence relation between event time and topic time → past interpretation in neutral contexts)

- **Kalaallisut** (Bittner 2005):
  - no tense specification in the grammar (Kalaallisut a true tenseless language?)
apparent future reference achieved by a large number (>30) of prospective predicates (hope, fear, desire, expectation, intent,...) that are evaluated with respect to the utterance time, but have a future import by way of inference.

5.3 On the future ‘tense’: No variation?

• Observation:
  Apparent ‘future’ forms have a special, mood like status in many typologically unrelated languages (English, St’át’imcets) → In many languages they are generated in the same position as modal operators (e.g. Kwa, Aboh 2004)

Q: Is there a future tense at all?

• Potential Universals:
  i. There is no future tense: Future must always combine with tense, but is no tense.
  ii. FUT-morphemes are always modals. Variation may exist with regard to the quantificational force (universal or unspecified) or with regard to the question of whether the FUT-morpheme is an irrealis morpheme or not.

Potential Consequences:
⇒ There may not be future – non-future tense languages after all
⇒ apparent past – non-past tense languages are really past – present tense languages, with a covert FUT-morpheme

6. Tense/Aspect in West African Languages? Hausa (Chadic)

• Observations:
  i. Hausa does not (or only marginally) overtly encode tense
  ii. There are two aspect markers for PERF and PROG (31a) and a future marker (31b).
  iii. The future marker does not co-occur with aspectual markers, and it does not surface in the same position as aspectual markers, but in a position accessible to mood markers (see also Aboh 2004 on Kwa) (31c).

(31) a. Hàwwa taa / ta-nàa dafà waakee
    Hawwa 3SG.F.PERF 3SG.F-PROG.cook beans
    ‘Hawwa cooked/is cooking beans.’

b. Hàwwa zaa tà dafà waakee
   Hawwa FUT 3SG.F cook beans
   ‘Hawwa will cook beans.’

c.*Hàwwa zaa taa / ta-nàa dafà waakee
   Hawwa FUT 3SG.F.PERF 3SG.F-PROG.cook beans
   ⇒ FUT as a modal operator? = Lilloet Salish

iv. PROG-marked clauses and PERF-marked clauses in Hausa are underspecified for tense and can receive either present or past interpretation, but no future interpretation (32abc)
   = Lilloet Salish; ≠ Mandarin Chinese
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(32) a. **ta-nàa** dafà ruuwà **yanzu** / **jiyà**  
\[3\text{SG.F-PROG} \text{boil water now yesterday}\]  
‘She is boiling water right now.’ / ‘She was boiling water yesterday.’

b. **Naa** gan shi **yanzu** / **jiyà**  
\[1\text{SG.PERF} \text{see 3sg now yesterday}\]  
‘I see him now.’ / ‘I saw him yesterday.’

c. * **ta-nàa** dafà ruuwà **gòobe**

d. * **Naa** gan shi **gòobe**

v. The Hausa **FUT**-marker gives rise to *will/would*-readings = English, Lilloet Salish

(33) [A mako biyu da suka wuce] Susan ta ce  
\[at \text{week two REL } 3\text{PL.REL} \text{passed S. 3SG.F-PERF say}\]  
za ta rabu da mijinta mako d’aya bayan nan  
\[\text{FUT 3SG.F-PERF separate with husband-her week one after now}\]  
‘Two weeks ago Susan said that she **would** leave her husband two weeks from then.’

⇒ Future does not indicate a tense of its own

• Possible Analyses:

1\text{st} option: Hausa = Lilloet Salish: there is an unpronounced T-morpheme with the value [present, past] in all clauses and receives a past or present interpretation depending on context; the future modal combines with the covert tense morpheme to yield *will-* or *would*-readings.

⇒ Hausa as a superficially tenseless language

2\text{nd} option: Hausa ≠ Lilloet Salish:

i. only overtly aspectually marked clauses (PROG, PERF) introduce a T-projection (*T-Asp*-dependency) with a covert morpheme that is interpreted depending on context.

ii. one of the semantic functions of the **ASP**-marker is to introduce existential closure over the event variable: *There was an event/ is an event taking place such that …*.

iii. In the absence of aspectual marking, modal operators (including **FUT**) operate directly over the verb’s event variable; **FUT** indicates posteriority relative to a contextually given temporal reference point.

⇒ Hausa as a partially tenseless language

3\text{rd} option: more radical still

i. There is no T-projection in Hausa;

ii. Only the two **ASP**-markers introduce a reference-time variable $t_R$ the value of which is restricted to [present, past] and must be recovered from context.

iii. Since the **FUT**-marker does not co-occur with the aspectual markers, the posteriority expressed by **FUT** must resolved from the context.

⇒ Hausa as a syntactically tenseless language
7. **Research Assignments**

i. What kind of aspectial and modal markers are found in your language?

ii. Do they occur in the same syntactic position; or in different ones?

iii. Can future-marker and aspectual markers co-occur?

iv. What is the range of possible *temporal* interpretations (present, past, future) of progressive-, perfective-, and future-marked clauses in the language?

v. To what extent does the language resemble the behaviour of Lilloet Salish?

**References**


