Deriving some observations on temporal interpretation in Vietnamese sentences

Tue Trinh
University of Wisconsin at Milwaukee
tuetrinh@alum.mit.edu

Trang Phan
Ton Duc Thang University
phanthihuyentrang@tdtu.edu.vn

Abstract

We describe several facts concerning temporal interpretation of sentences in Vietnamese and present an account which is based on the analysis proposed in Abusch (1988) as it is interpreted by Heim (1994). Our account assumes that tense is explicitly represented in Vietnamese as a pronominal element. Thus, it constitutes supporting evidence for the pronominal theory of tense and for the universality of T as a syntactic category.

1   Introduction

1.1   Two issues concerning tense

Debates on tense as a linguistic category have raised two issues concerning its representation. The first is semantic and concerns whether tense is "quantificational" or "pronominal." A quantificational statement is exemplified by (1a). It does not describe a particular individual, and its interpretation does not depend on how reference is determined by the conversational context. In other words, its truth condition can be derived solely from syntactic structure and lexical meaning of the words. In contrast, a pronominal statement, exemplified by (1b), depends on the assignment function for its interpretation. Its truth condition is derived not only from the lexical meaning of the words and the way they are combined, but also from how certain elements in the sentence is contextually interpreted. We use the fraction notation for the representation of linguistic meanings, whereby the numerator represents the assertive content and the denominator represents the presuppositional content. Note that the function g represents the way the context assigns reference to pronominal elements in the sentence (cf. Heim and Kratzer 1998).

(1)   a.   A man came into the room $= \exists x(x$ is a man $\land x$ came into the room)   *quantificational*

   b.   He$_7$ came into the room $= \dfrac{g(7) \text{ came into the room}}{g(7) \text{ is a man}}$ *pronominal*
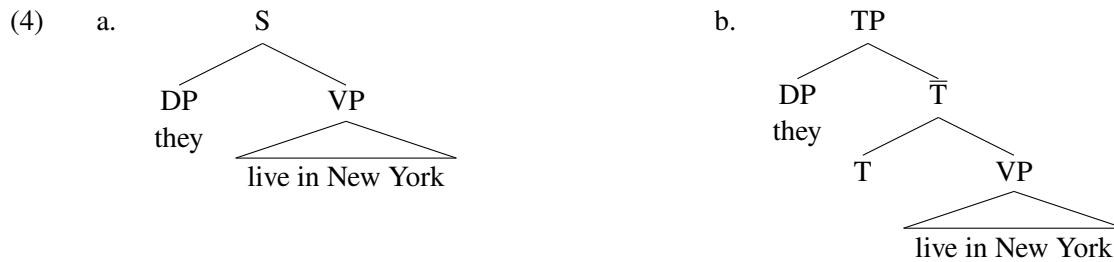
A past tense sentence such as (2), in its quantificational interpretation (cf. Prior 1967, Montague 1973), states that there is a time t preceding the time of utterance such that John kisses Mary at t. In the pronominal interpretation (cf. Partee 1973, Kratzer 1998), the sentence is a statement about a particular time t, which says that Mary helps John at t, and which comes with the presupposition that t precedes the time of utterance.

(2)   Mary helped John
   a. $\exists t(t$ precedes the speech time $\land$ Mary helps John at $t)$ *quantificational*
   b. $\dfrac{\text{Mary helps John at } t}{t \text{ precedes the speech time}}$ *pronominal*

The second issue in the debate on tense concerns syntax. The question is whether tense is always syntactically represented, even in morphologically tenseless languages such as Vietnamese. As an example, consider (3).

(3)   Họ   sống ở New York
        They live   in New York

This Vietnamese sentence overtly consists of a DP, which is the subject, and a VP, which is the predicate. There is no morphological element mediating between these two sentence parts, i.e. no tense. This means that (4a) and (4b) are both possible analyses of (3).

(4)   a.   S   b.   TP

              DP   VP   DP   T̄
              they   they
                      live in New York   T   VP

                                                                        live in New York

The analysis in (4a) concurs with the hypothesis that tense is not always syntactically represented, or more strongly, that tense is not represented in some languages, Vietnamese being one among them (cf. Wu 2009, Lin 2006, Cao 1998). The analysis in (4b) concurs with the hypothesis that tense is always represented in the syntax, which entails that in sentences where tense is not detectable in the phonological signal, tense is still there, as a silent morpheme.

In this paper, we present data from Vietnamese which clarify the two issues above. Specifically, our analysis of these data is based on the assumption that (i) tense is pronominal and (ii) tense is always syntactically represented.

1.2   Observations on Vietnamese Tense

In the next five subsections, we present the data to be analyzed. These data concern the interpretation of the anteriority morpheme **đã** in matrix sentences and in various types of embedded sentences. They also concern the interpretation of sentences containing no overt tense morpheme. The analysis of these data, which is presented in the last section, will show that tense in Vietnamese is pronominal instead of quantificational, and that tense is always represented syntactically in this language.

1.2.1 Temporal anteriority

In Vietnamese, the tense morpheme **đã** expresses temporal anteriority. It is incompatible with present or future interpretation. This is evidenced by the three-way contrast shown in (5), given the common knowledge that Barrack Obama is a former US president while Donald Trump is the current one.

(5)   a.   Barrack Obama đã sống trong Nhà Trắng
              Barrack Obama ĐÃ live   in   White House
              'Barrack Obama lived in the White House'
        b.   #Donald Trump đã sống trong Nhà Trắng
              Donald Trump ĐÃ live   in   White House
              'Donald Trump lived in the White House'
        c.   #Tổng thống tương lai đã sống trong Nhà Trắng
              the future president   ĐÃ live   in   White House
   'The future president lived in the White House'

1.2.2 Past under past

In the "past-under-past" configuration, where **đã** is contained in a sentence which is embedded under another sentence containing **đã**, the "backward-shifted" reading is attested, while the "simultaneous" and the "forward-shifted" readings are not available: (6) entails that the time of Mary's living in New York precedes the time of John's thought, which itself precedes the time of utterance.

(6)   John đã nghĩ rằng Mary đã sống ở New York
        John ĐÃ think that Mary ĐÃ live in New York
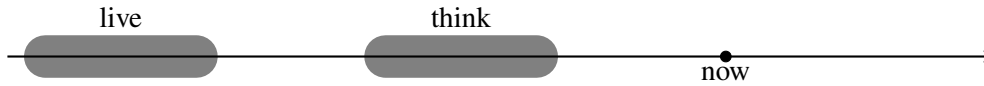
This is evidenced by the three-way contrast in (7). (Note that the time adverbials in the complement clause are to be read "de dicto," i.e. in the scope of **nghĩ** 'think.')
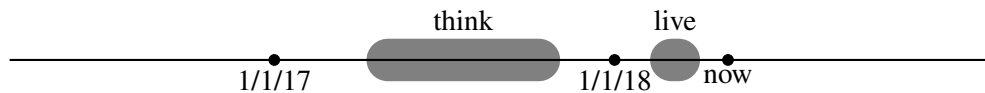
(7)   a.   Năm ngoái, John đã nghĩ rằng trước đó Mary đã sống ở New York
             last year John ĐÃ think that before that Mary ĐÃ live in New York
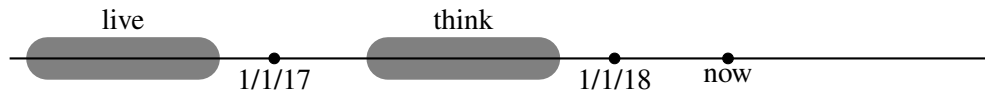
        b.   #Năm ngoái, John đã nghĩ rằng vào lúc đó Mary đã sống ở New York
             last year, John ĐÃ think that at that time Mary ĐÃ live in New York
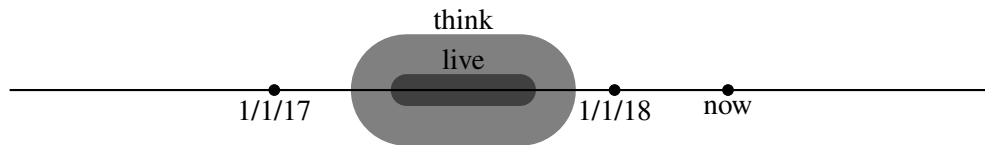
        c.   #Năm ngoái, John đã nghĩ rằng sau đó Mary đã sống ở New York
   last year, John ĐÃ think that after that Mary ĐÃ live in New York

1.2.3 Subjective evaluation

Note, however, that there is a difference with respect to how the two precedence relations described by (6), repeated below in (8), are evaluated.

(8)   John đã nghĩ rằng Mary đã sống ở New York
        John ĐÃ think that Mary ĐÃ live in New York

Specifically, while it must be objectively true that the time of John's thought precedes the time of utterance, it does not have to be objectively true that the time of Mary's living in New York precedes the time of John's thought or the time of utterance. Thus, suppose that John's thought about Mary occured in 2017, but at that time, John wrongly believed the year to be 2020. If John said to himself "Mary lived in New York in 2019," then (8) can be uttered truthfully. This is illustrated by (9). Note the dotted arrow connecting "think" on the top line to the whole of the bottom line. This is to illustrate the fact that the bottom line represents how things are temporally located according to John's thinking in reality.

(9) Năm ngoái, John bị   thần kinh. Nó tưởng đó là   năm 2020, và đã nghĩ rằng Mary đã
     last year   John went crazy   he mistook it to be year 2020 and ĐÃ think that Mary ĐÃ
     sống ở New York vào năm 2019.
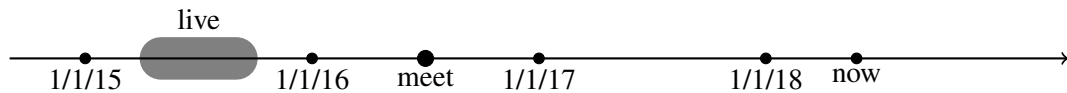   live in New York in   year 2019
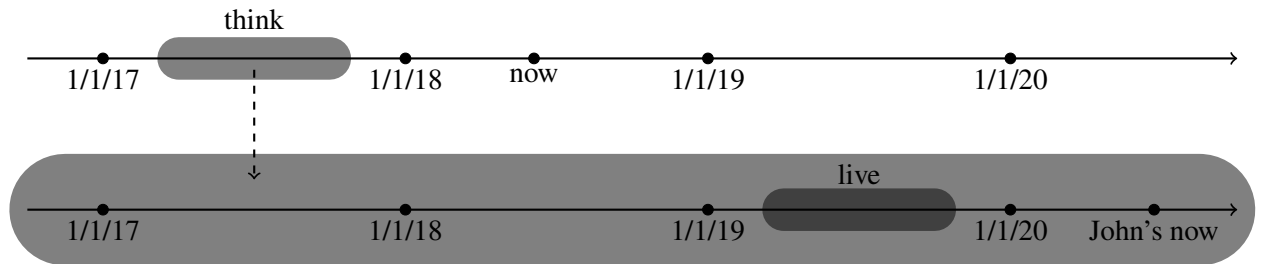
Thus, when a past tense attitude verb has a past tense sentential complement, what is required is that (i) the time at which the attitude obtains precedes the time of utterance, and (ii) the attitude holder subjectively locates the event described by the complement in *his* past. The actual temporal relation between the event time and the attitude time on the one hand and the utterance time on the other is irrelevant for the evaluation of the sentence.

1.2.4 Relative clauses

When **đã** is contained in a relative clause instead of a complement clause, with the main clause also containing **đã**, both the the backward-shifted and the forward-shifted readings are available, as is the simultaneous reading.

(10) a. Vào năm 2016, John đã gặp cái người đàn bà mà đã sống ở New York vào năm 2015
          In   year 2016, John ĐÃ meet the woman   who ĐÃ live in New York in   year 2015

      b. Vào năm 2016, John đã gặp cái người đàn bà mà đã sống ở New York vào thời điểm đó
          In   year 2016, John ĐÃ meet the woman   who ĐÃ live in New York at that time
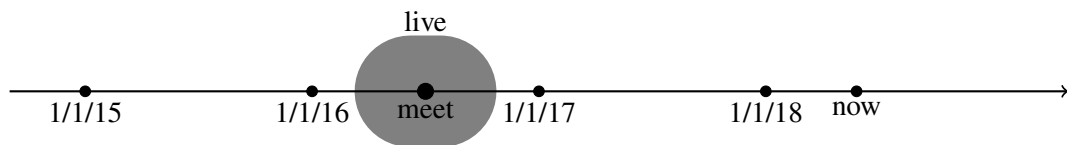
      c. Vào năm 2016, John đã gặp cái người đàn bà mà đã sống ở New York vào năm 2017
          In   year 2016, John ĐÃ meet the woman   who ĐÃ live in New York in   year 2017
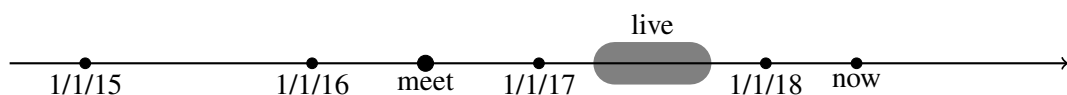
1.2.5 Bare clauses

1.2.5.1 Unembedded bare clauses

We will call sentences without an overt tense morpheme "bare clauses." Initial observation may lead one to suspect that in Vietnamese, bare clauses are compatible with past, present, and future interpretation, as evidenced by the felicity of all sentences in (11).

(11)   a.   Barrack Obama sống trong Nhà Trắng
            Barrack Obama live   in   the White House
        b.   Donald Trump sống trong Nhà Trắng
            Donald Trump live   in   the White House
        c.   Tổng thống tương lai sống trong Nhà Trắng
            the future president   live in   the White House

However, it seems that a bare clause in Vietnamese can describe a future event only if it is a planned event (cf. Dowty 1979). Controlling for this factor, we observe that a bare clause does not really allow a future reading: (12) is severely degraded without the auxiliary **sẽ** 'will.'

(12)   Hôm nay, John coi   Mary là bạn, nhưng ngày mai, John *(sẽ) coi   Mary là kẻ thù
        Today   John consider Mary be friend but   tomorrow John   will consider Mary be enemy

We take the difference between (11c) and (12) to show that it is much more difficult to construe John's considering Mary an enemy as a planned event than it is to construe the future president living in the White House as one. We will henceforth disregard the "planned event" reading of matrix bare clauses and assume that these only have the past and the present tense reading.
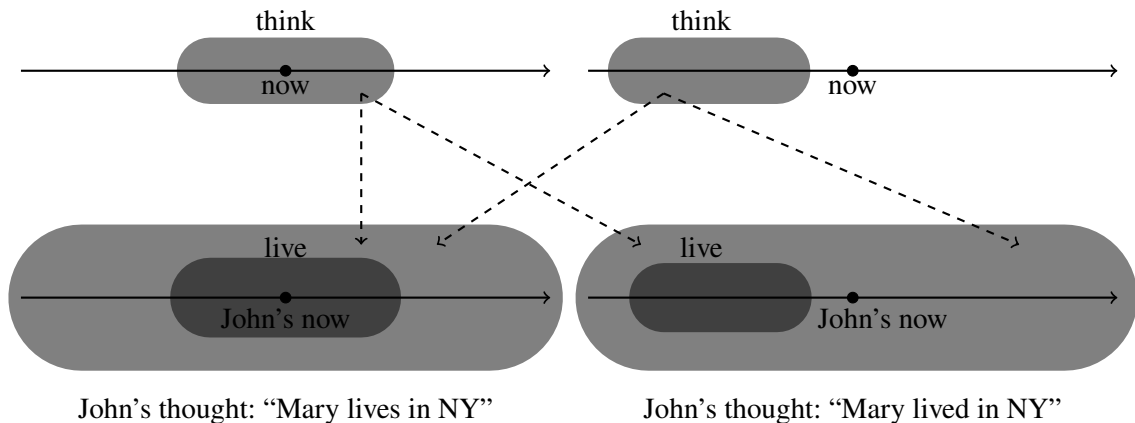
(13)   John sống ở New York
      John live   in New York
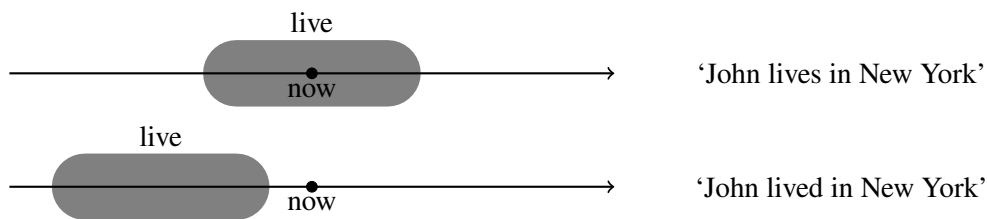
### 1.2.5.2 Embedded bare clauses

We now turn to embedded bare clauses. It is observed that when a bare clause is embedded under an attitude verb, it only has the backward-shifted and the simultaneous reading, but does not have the forward-shifted reading: (14) is true iff John's thought to himself is either "Mary lived in New York (in the past)" or "Mary lives in New York (at the present), but not when it is "Mary will live in New York (in the future)." This four-way possibility, in which both the thinking and the content of the thought can both be either in the present or in the past, is represented by the four broken arrows in the diagram below (14).

(14)   John nghĩ rằng Mary sống ở New York
   John think that Mary live   in New York

When a bare clause is a relative clause instead of a complement, all three readings are available.

(15) a. Vào năm 2016, John đã gặp cái người đàn bà mà sống ở New York vào năm 2015
          In   year 2016, John ĐÃ meet the woman   who live in New York in   year 2015
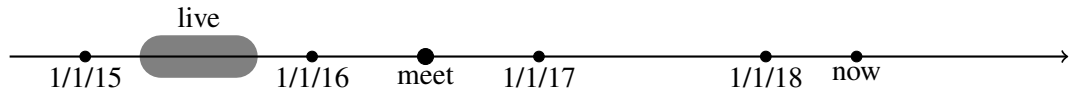
b. Vào năm 2016, John đã gặp cái người đàn bà mà sống ở New York vào thời điểm đó
    In   year 2016, John ĐÃ meet the woman   who live in New York at that time
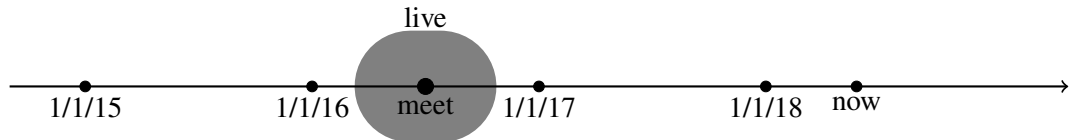
c. Vào năm 2016, John đã gặp cái người đàn bà mà sống ở New York vào năm 2017
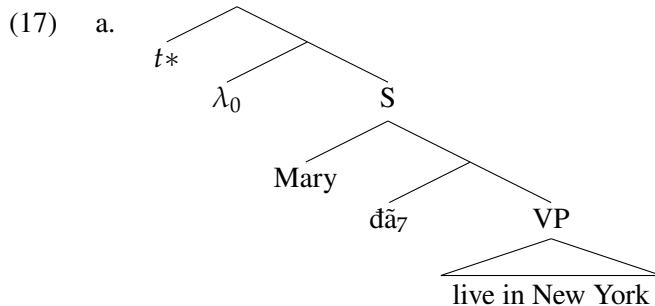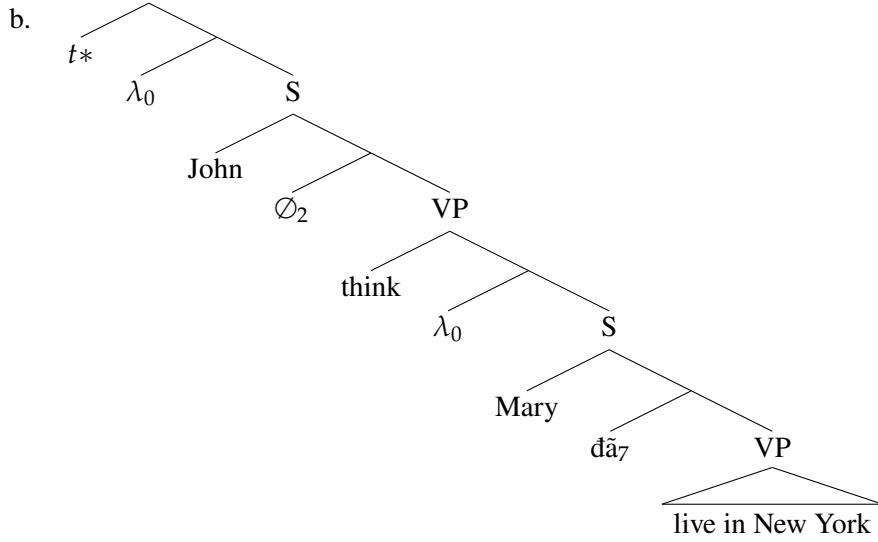   In   year 2016, John ĐÃ meet the woman   who live in New York in   year 2017
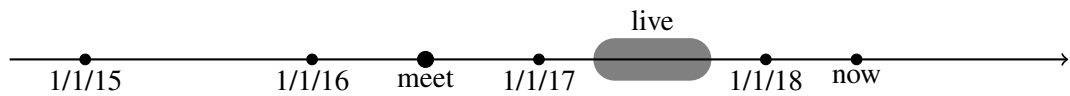
2   Analysis

We formulate our account for the facts presented above using the concepts and tools of the framework proposed in Abusch (1988) as interpreted by Heim (1994), making some simplifications in order to facilitate exposition.

We make the following syntactic assumptions. First, linguistic variables are of type e, for individuals, and type i, for time intervals. Second, every sentence in Vietnamese projects a TP, with T being the locus for type i pronominal elements, which in Vietnamese are $\mathbf{đã}_n$ and the phonologically empty $\varnothing_n$. Third, VPs are of type $\langle i, \langle e, t \rangle \rangle$, and propositional attitude verbs are of type $\langle \langle i, t \rangle, \langle i, \langle e, t \rangle \rangle \rangle$. Fourth, every sentence combines with a distinguished binder λ_0 which binds variables of type i. Finally, every unembedded sentence combines with a distinguised tense pronoun $t*$. These assumptions mean that (16a) and (16b) will have the Logical Forms in (17a) and (17b), respectively.

(16) a. Mary đã sống ở New York
          Mary ĐÃ live in New York
      b. John nghĩ rằng Mary đã sống ở New York
          John think that Mary ĐÃ live in New York

(17) a.

b.

```
t*
   λ₀        S
         John
              ∅₂         VP
                    think
                         λ₀          S
                                 Mary
                                      đã₇        VP
                                              live in New York
```

Semantically, we assume the following meanings for lexical items and syntactic phrases. Note the difference between the presupposition of **đã**$_n$ and that of the empty tense pronoun $\varnothing_n$: the former encodes the relation "earlier than," while the latter encodes the relation "earlier than or at the same time as." This captures the fact that sentences with **đã** expresses anteriority, while those without an overt tense morpheme, i.e. bare clauses, expresses "non-futurity." There is a distinguished pronoun, $t*$, which refers to the time of utterance. Finally, note the meaning of the attitude verb **nghĩ** 'think': it shifts the time of evaluation for its complement proposition to the time at which the attitude holder locates himself. This captures the "subjective evaluation" facts described in subsection 1.2.3.

(18) a. $[\![\mathbf{đã}_n]\!]^{g,c} = \dfrac{g(n)}{g(n) < g(0)}$

b. $[\![\varnothing_n]\!]^{g,c} = \dfrac{g(n)}{g(n) \leq g(0)}$

c. $[\![\lambda_0 \, \phi]\!]^{g,c} = [\lambda t \, [[\![\phi]\!]^{g^{t/0},c}]]$

d. $[\![t*]\!]^{g,c} = t_c$, the utterance time of context c

e. $[\![\textbf{live in New York}]\!]^{g,c} = [\lambda t \, [\lambda x \, [x \text{ lives in New York at } t]]]$

f. $[\![\mathbf{nghĩ}]\!]^{g,c} = [\lambda p \, [\lambda t \, [\lambda x \, [p(t') = 1 \text{ for every } t' \text{ at which } x \text{ locates } x \text{ at } t]]]]$

g. $[\![\mathbf{Mary}]\!]^{g,c} = \text{Mary}, [\![\mathbf{John}]\!]^{g,c} = \text{John}$

Below are derivations of the truth conditions of (17a) and (17b). As we can see, the results correspond to our intuitions about these sentences.

(19) $[_\alpha \, t* \, [_\beta \, \lambda_0 \, [_\gamma \, \text{Mary} \, [_\delta \, \text{đã}_7 \, [_\epsilon \, \text{live in NY}]]]]]$

a. $[\![\alpha]\!]^{g,c} = [\![\beta]\!]^{g,c}([\![t*]\!]^{g,c}) = [\![\beta]\!]^{g,c}(t_c)$

b. $[\![\beta]\!]^{g,c} = [\lambda t \, [[\![\gamma]\!]^{g^{t/0},c}]]$

c. $[\![\gamma]\!]^{g^{t/0},c} = [\![\delta]\!]^{g^{t/0},c}([\![\mathbf{Mary}]\!]^{g^{t/0},c}) = [\![\delta]\!]^{g^{t/0},c}(\text{Mary})$

d. $[\![\delta]\!]^{g^{t/0},c} = [\![\epsilon]\!]^{g^{t/0},c}([\![\mathbf{đã}_7]\!]^{g^{t/0},c}) = [\![\epsilon]\!]^{g^{t/0},c}\left(\dfrac{g^{t/0}(7)}{g^{t/0}(7) < g^{t/0}(0)}\right) = \dfrac{[\![\epsilon]\!]^{g^{t/0},c}(g(7))}{g(7) < t}$

$= \dfrac{[\lambda x \, [x \text{ lives in NY at } g(7)]]}{g(7) < t}$

e. $[\![\gamma]\!]^{g^{t/0},c} = \dfrac{[\lambda x \, [x \text{ lives in NY at } g(7)]]}{g(7) < t}(\text{Mary}) = \dfrac{[\lambda x \, [x \text{ lives in NY at } g(7)]](\text{Mary})}{g(7) < t}$

f. $[\![\beta]\!]^{g,c} = \left[\lambda t \, \left[\dfrac{[\lambda x \in \mathcal{D}_e. \, x \text{ lives in NY at } g(7)](\text{Mary})}{g(7) < t}\right]\right]$

g. $\quad [\![\alpha]\!]^{g,c} = \left[\lambda t \left[\dfrac{[\lambda x \in \mathcal{D}_e.\ x \text{ lives in NY at } g(7)](\text{Mary})}{g(7) < t}\right]\right] (t_c)$

$= \dfrac{[\lambda x\ [x \text{ lives in NY at } g(7)]](\text{Mary})}{g(7) < t_c}$

$= 1$ iff $g(7) < t_c$ and Mary lives in NY at $g(7)$

(20) $\quad [_\alpha\ t* [_\zeta\ \lambda_0\ [_\eta\ \text{John}\ [_\theta\ \varnothing_2\ [_\kappa\ \text{think}\ [_\beta\ \lambda_0\ [_\gamma\ \text{Mary}\ [_\delta\ \text{đã}_7\ [_\epsilon\ \text{live in NY}]]]]]]]]]]$

a. $\quad [\![\alpha]\!]^{g,c} = [\![\zeta]\!]^{g,c}([\![t*]\!]^{g,c}) = [\![\zeta]\!]^{g,c}(t_c)$

b. $\quad [\![\zeta]\!]^{g,c} = [\lambda t\ [[\![\eta]\!]^{g^{t/0},c}]]$

c. $\quad [\![\eta]\!]^{g^{t/0},c} = [\![\theta]\!]^{g^{t/0},c}([\![\textbf{John}]\!]^{g^{t/0},c}) = [\![\theta]\!]^{g^{t/0},c}(\text{John})$

d. $\quad [\![\theta]\!]^{g^{t/0},c} = [\![\kappa]\!]^{g^{t/0},c}([\![\varnothing_2]\!]^{g^{t/0},c}) = [\![\kappa]\!]^{g^{t/0},c}\left(\dfrac{g^{t/0}(2)}{g^{t/0}(2) \le g^{t/0}(0)}\right) = \dfrac{[\![\kappa]\!]^{g^{t/0},c}(g(2))}{g(2) \le t}$

e. $\quad [\![\kappa]\!]^{g^{t/0},c} = [\![\textbf{think}]\!]^{g^{t/0},c}([\![\beta]\!]^{g^{t/0},c})$

$= [\lambda t\ [\lambda x\ [[\![\beta]\!]^{g^{t/0},c}(t') = 1 \text{ for every } t' \text{ at which } x \text{ locates } x \text{ at } t]]]$

$= [\lambda t\ [\lambda x\ [g(7) < t' \text{ and Mary lives in NY at } g(7) \text{ for every } t' \text{ at which } x \text{ locates } x \text{ at } t]]]$

f. $\quad [\![\theta]\!]^{g^{t/0},c} = \dfrac{[\lambda x\ [g(7) < t' \text{ and Mary lives in NY at } g(7) \text{ for every } t' \text{ at which } x \text{ locates } x \text{ at } g(2)]]}{g(2) \le t}$

g. $\quad [\![\eta]\!]^{g^{t/0},c} = \dfrac{[\lambda x\ [g(7) < t' \text{ and Mary lives in NY at } g(7) \text{ for every } t' \text{ at which } x \text{ locates } x \text{ at } g(2)]](\text{John})}{g(2) \le t}$

h. $\quad [\![\zeta]\!]^{g,c}$

$= \left[\lambda t \left[\dfrac{[\lambda x\ [g(7) < t' \text{ and Mary lives in NY at } g(7) \text{ for every } t' \text{ at which } x \text{ locates } x \text{ at } g(2)]](\text{John})}{g(2) \le t}\right]\right]$

i. $\quad [\![\alpha]\!]^{g,c}$

$= \dfrac{[\lambda x\ [g(7) < t' \text{ and Mary lives in NY at } g(7) \text{ for every } t' \text{ at which } x \text{ locates } x \text{ at } g(2)]](\text{John})}{g(2) \le t_c}$

$= 1$ iff $g(2) \le t_c$ & for every t' at which John locates himself at $g(2)$, $g(7) < t'$ & Mary lives in NY at $g(7)$

This suffices to show that our account makes the correct predictions about temporal interpretation in matrix and complement sentences in general. As for relative clauses, we will assume that NPs of every type can undergo Quantifier Raising (cf. Heim 1997). Thus, (21a) and (21b) can have the structures in (22a) and (22b), respectively.

(21) a. John đã gặp cái người đàn bà mà đã sống ở New York
John ĐÃ meet the woman who ĐÃ live in New York

b. John đã gặp cái người đàn bà mà sống ở New York
John ĐÃ meet the woman who live in New York

(22) a.

8

b.
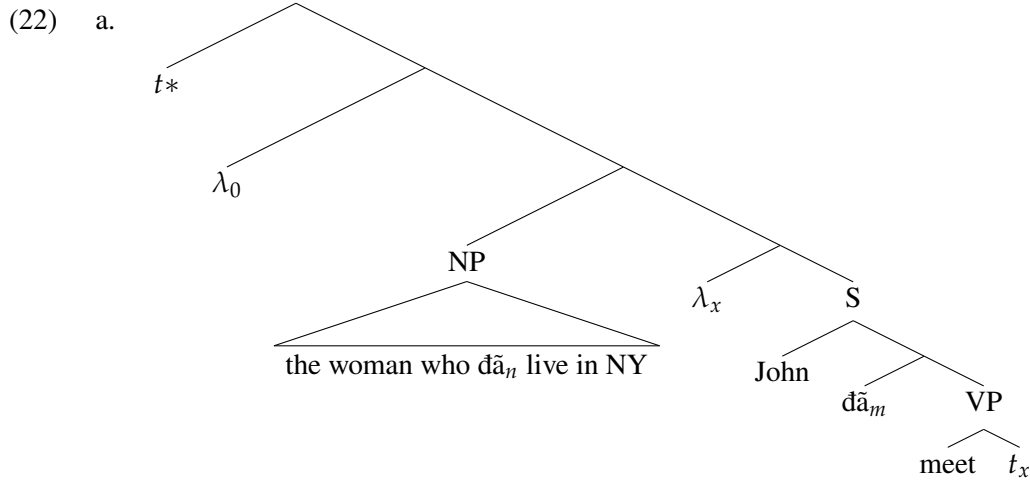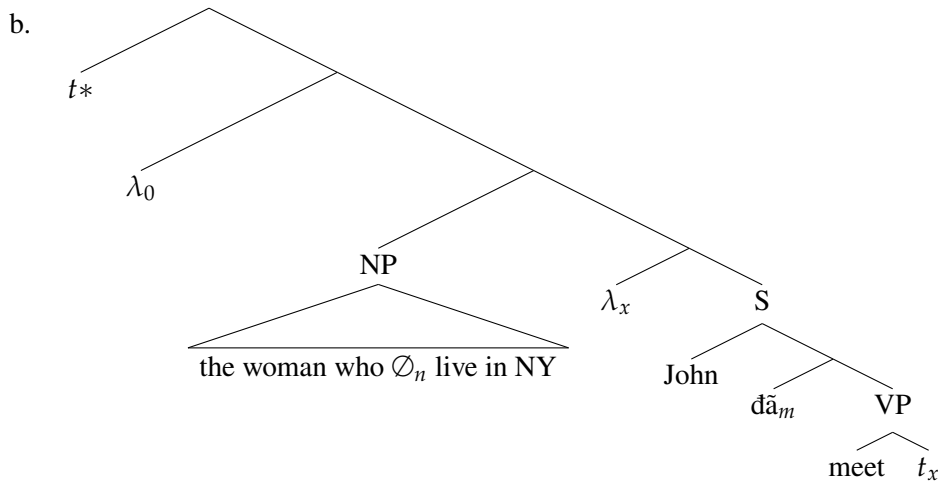
The simultaneous reading is generated if $n = m$. The backward shifted reading is generated if $g(n) < g(m)$. And the forward shifted reading is generated if $g(n) > g(m)$. As nothing in the grammar prevents any of these three possibilities, we correctly predict the facts described in subsection 1.2.4.

References

Abusch, Dorit. 1988. Sequence of tense, intensionality and scope. In *Proceedings of WCCFL 7*, 1–14.

Cao, Xuân Hạo. 1998. Về ý nghĩa "Thì" và "Thể" trong tiếng Việt. *Ngôn ngữ* 5:2–31.

Dowty, David R. 1979. *Word meaning and Montague grammar*, volume 7. Dordrecht, The Netherlands: Kluwer Academic Publishers.

Heim, Irene. 1994. Comments on Abusch's theory of tense. In *Ellipsis, Tense and Questions*, ed. Hans Kamp. Dyana-2 Deliverable.

Heim, Irene. 1997. Predicates or formulas? Evidence from ellipsis. In *Semantics and Linguistic Theory 7*, ed. Aaron Lawson and Eun Cho, 197–221. Ithaca, NY: CLC Publications.

Heim, Irene, and Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Blackwell.

Kratzer, Angelika. 1998. More structural analogies between pronouns and tense. In *Proceedings of SALT VIII*, ed. Devon Strolovitch and Aaron Lawson, 92–110. Ithaca, NY: CLC Publications.

Lin, Jo-Wang. 2006. Time in a language without tense: The case of Chinese. *Journal of Semantics* 1–53.

Montague, Richard. 1973. The proper treatment of quantification in ordinary English. *Approaches to Natural Language* 49:221–242.

Partee, Barbara. 1973. Some structural analogies between tenses and pronouns in English. *Journal of Philosophy* 601–609.

Prior, Arthur. 1967. *Past, Present, and Future*. Oxford University Press.

Wu, Jiun-Shiung. 2009. Tense as a discourse feature: rethinking temporal location in Mandarin Chinese. *Journal of East Asian Linguistics* 18:145–165.