

Simultaneous Readings

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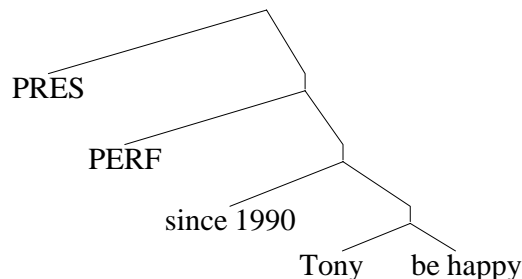
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1 Introduction

- (1) Tony has been happy since he has been taking Prozac.
- (2) Tony has been happy at least since he's been taking Prozac.
- (3) Tony has been happy since he's been taking Prozac, and perhaps even longer.

2 Background: Outlines of a Quick Analysis of the (English) Perfect

- (4) Ingredients:
 - a. Intensional Semantics.
 - b. Tense sets evaluation time (interval) relative to prior evaluation time or absolutely relative to utterance time.
 - c. The perfect introduces a new interval: the "perfect time span" (PTS).
 - d. The right boundary (RB) of the PTS is set by tense.
 - e. The left boundary (LB) of the PTS may be set by "perfect adverbials".
 - d. Within the PTS, the lower predicate is located via various devices.
- (5) U-Perfect: homogeneous predicate asserted of PTS (universal operator?)
 - a. Since 1990, Tony has been happy.
 - b. Since March, Tony has been taking Prozac.
- (6) Example LF for a U-Perfect:



(7) Some Details

- a. $\llbracket \text{PRES } \phi \rrbracket^{t,u} = \llbracket \phi \rrbracket^{u,u}$
- b. $\llbracket \text{PERF} \rrbracket^t = \lambda p_{\langle s,t \rangle}. \exists t': \text{RB}(t,t') \ \& \ p(t') = 1$
- c. $\llbracket \text{since 1990} \rrbracket^t = \lambda p_{\langle s,t \rangle}. \text{LB}(1990,t) \ \& \ p(t) = 1$
- d. $\text{LB}(t,t')$ iff $t \cap t' \neq \emptyset$ and $\neg \exists t'': t'' < (t \cap t') \ \& \ t'' \in t'$
- e. $\text{RB}(t,t')$ iff $t \cap t' \neq \emptyset$ and $\neg \exists t'': (t \cap t') > t'' \ \& \ t'' \in t'$

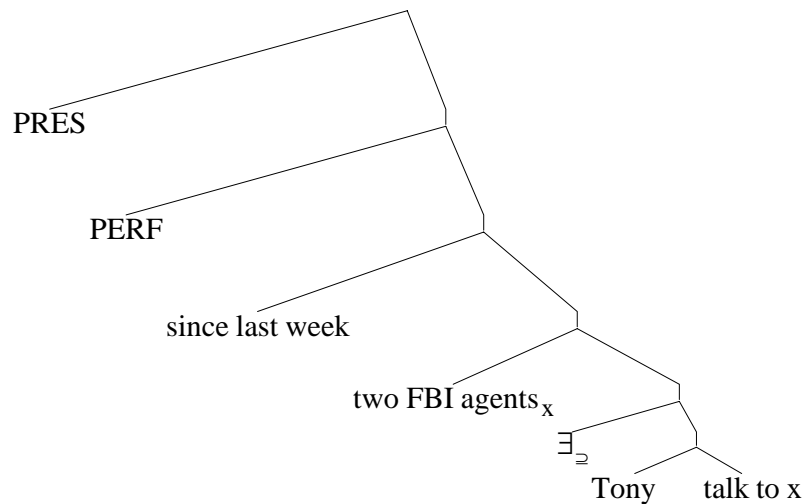
(8) Tony has been happy since 1990.

There is an interval (i) whose RB is the time of utterance, (ii) whose LB is (some time in) 1990, (iii) which is an interval throughout which Tony is happy.

(9) E-Perfect: existential operator locating predicate in PTS.

- a. Since March, Tony has identified a (second) traitor in his family.
- b. Since 1990, Tony has been to Sicily twice.
- c. Since last week, Tony has talked to two FBI agents.

(10) Example LF for an E-Perfect



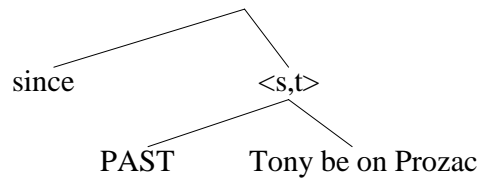
(11) $\llbracket \exists_x \rrbracket^t = \lambda p_{\langle s,t \rangle}. \exists t': t \supseteq t' \ \& \ p(t') = 1$

(12) Tony has talked to two FBI agents since last week.

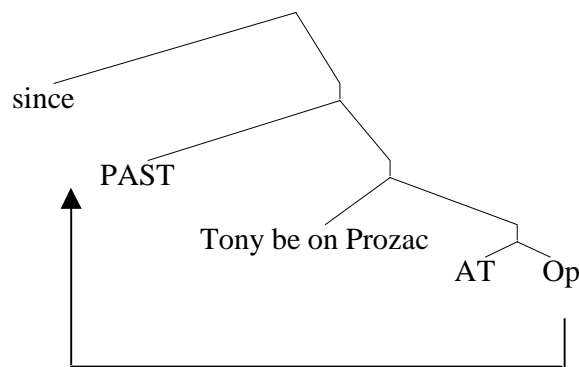
There is an interval (i) whose RB is the time of utterance, (ii) whose LB is (some time in) last week, (iii) such that there are two FBI agents x such that the interval has a subinterval at which Tony talks to x.

3 Complements to *Since*

- (13) since 1990, since last week, since March
- (14) since the World Cup, since Meadow's graduation ceremony
- (15) since Tony met Carmela, since Tony's uncle was indicted, since Tony was on Prozac
- (16) Tony has been happy since he was on Prozac.
- (17) Type mismatch:



(18)



(19) since Op λt PAST Tony be on Prozac at t

(20) $[[AT]]^t(t) = \lambda p. t = t' \ \& \ p(t') = 1$

(21) What does Op mean?

If Tony ever was on Prozac, there are many past intervals at which Tony was on Prozac (all the subintervals of the biggest one). We seem to be forced to assume that Op picks out from a set of intervals the maximal one.

[What if there were more than one discontinuous intervals at which Tony was on Prozac?]

(22) Tony has been happy since he visited Italy twice.

- (23) Where does the AT and the Op come from?
- (24) Tony has been apprehensive since Pussy claimed that the FBI would start watching Tony's house.

4 The Puzzle

(25) **Tony has been happy since he has been taking Prozac.**

(26) What is the PTS?

RB = the present

LB = the time at which Tony started taking Prozac.

(27) Why? How?

5 Attempt #1

(28) # Tony has been happy since the time (at which) he has been taking Prozac.

(29) Tony has been happy since Op λ t PRES PERF he be taking Prozac at t

(30) the time at which he has been taking Prozac = the interval from now backwards to when Tony started taking Prozac

Why? Op picks out the maximal interval from a set of intervals (see above).

(31) Assume Tony has been taking Prozac since the beginning of this month.

Tony has been happy since he has been taking Prozac.

\neq # Tony has been happy since this month.

(32) OK: Tony has been happy since some time this month.

(33) A correct paraphrase:

Tony has been happy since the time since which he has been taking Prozac.

6 Attempt #2

(34) Tony has been happy since the time since which he has been taking Prozac.

(35) Tony has been happy since the time t such he has been taking Prozac since t.

(36) Tony has been happy since [Op λ t: he has been taking Prozac since t].

(37) [Op λt : he has been taking Prozac ~~since t~~] $\lambda t'$ Tony has been happy since t'.

6.1 Step by step

- (38)
- The *since*-clause contains a full-fledged U-perfect with its own *since*-adverbial.
 - A temporal description is formed by moving a covert operator from the complement of the lower *since*.
 - The temporal description can QR.
 - After QR, the lower *since*-phrase can be elided since parallelism is satisfied.

6.2 The Meaning of Op

(39) Because of the meaning we have assumed for *since*, the set of intervals λt : he has been taking Prozac since t is actually the set of all intervals containing the time that Tony started taking Prozac.

Presumably, we need Op to pick out the minimal interval in that set.

(40) Since when has Tony been taking Prozac?

(41) Connections to work in the semantics of questions: Rullmann & Beck.

6.3 The Larson Connection

(42) By 1999, I will have lived in every city that John has lived (in). (Larson 1987)

(43) I have lived in Cambridge since last year.
#Tony has lived there ~~since last year~~ too.

(44) Tony has been happy since he has been taking Prozac (*since).

(45) *When has Tony been taking Prozac since?

(46) Tony has been happy since some time last year, but I don't know when.

6.4 An Alternative? (Ede Zimmermann, pc)

(47) Perhaps what happens is that since *since* with a perfect underneath cannot take the PTS as its argument, instead of AT, a SINCE-phrase is posited.

A kind of coercion.

7 Ramifications

7.1 *Other Languages*

(48) German has no U-Perfect

Tony has been taking Prozac since 1990.

#Tony hat seit 1990 Prozac genommen.

Tony has since 1990 Prozac taken.

(49) Tony nimmt seit 1990 Prozac.

Tony takes since 1990 Prozac.

(50) Tony has always submitted an abstract to SALT.

(51) Since 1990, Tony has submitted an abstract to every SALT.

(52) Seit 1990 Tony hat an jedes SALT einen Abstract geschickt.

Since 1990 Tony has to every SALT an abstract sent

(53) Seit 1990 schickt Tony an jedes SALT einen Abstract.

Since 1990 sends Tony to every SALT an abstract

(54) *Since 1990, Tony sends an abstract to every SALT.

(55) Tony ist glücklich seit er Prozac nimmt.

Tony is happy since he Prozac takes

7.2 *No E-Perfects Downstairs*

(56) Tony has gone dancing twice since he has been taking Prozac.

(57) *Tony has been happy since he has met Carmela.

(58) Since when has Tony been taking Prozac?

(59) *Since when has Tony met Carmela?

(60) Since when do you like artichokes?

7.3 *No Ambiguity in "Since"*

(61) Tony has gone dancing twice since he has been taking Prozac.

7.4 *Other Perfect Adverbials*

(62) Tony has been happy for the two months that he has been taking Prozac.

Selected References

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