

# Temporal succession of events in *Quand P, Q* sentences

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## Introduction

In this presentation, we deal with the temporal structure of *Quand P, Q* (or *Q quand P*) sentences where

- 1°) *Quand P* is a non-argument constituent;
- 2°) *P* and *Q* describe events (not states).

On the one hand, it is often claimed that temporal connectives serve to locate  $e_Q$  (the event described by the main clause) with respect to  $e_P$  (the event described by the subordinate clause) (see Heinämäki (1978), Kamp and Reyle (1993)). This approach suggests that *when/quand* expresses a temporal overlap (De Swart (1999)). On the other hand, it is well known that *when/quand P, Q* often gives rise to another interpretation, namely that  $e_P$  precedes  $e_Q$ . Thus, Kamp and Rohrer (1983) consider that the temporal structure of (1) is the same as that of (2):

- (1) *Quand Pierre entra, Marie téléphona.*
- (2) *Pierre entra. Marie téléphona.*

The puzzle is: why do we infer temporal succession in (1) given that it conflicts with the intuitive semantics of *when/quand*.

## 1. Hinrichs' and Partee's proposals

Hinrichs (1981, 1986) and Partee (1984) assume that in a simple past discourse, an event described in the simple past

- is included in a (current) reference time;
- introduces a new reference time which is temporally ordered after the previous reference time.

It accounts for the fact that two consecutive events in a simple past discourse are ordered in a temporal sequence.

Their theories differ concerning the treatment of *when*-clauses.

### 1.1 Hinrichs (1981, 1986)

In view of examples (3)-(5) Hinrichs (1986: 75) talks about “a reference frame which is introduced

by the temporal conjunction *when*”.

- (3) *John broke his arm when he wrecked the Pinto.*
- (4) *When the Smiths moved in, they threw a party.*
- (5) *When the Smiths threw a party, they invited all their old friends.*

The reference frame introduced by *when* includes the two events.

“If two accomplishments or achievements are connected by *when*, they can have any temporal order with respect to each other”. (Hinrichs 1986: 75)

## 1.2 Partee (1984)

“Hinrichs gives examples [...] that show that the event in the main clause does not always have to follow the event in the *when*-clause when both are in the simple past. [...] But we already know that such conditions can obtain between successive simple sentences as well. [...] We can generalize the idea that in the simple linear case, an event clause moves the narrative forward by bringing in a new reference time that is 'just after' the given event, and characterize the reference time introduced by the *when*-clause as well: a (preposed) *when*-clause in a linear narrative triggers the introduction of a new reference time located 'just after' the event described in the *when*-clause”. (Partee 1984: 260)

An advantage of Partee's theory is that it correctly predicts that temporal succession is the *default* relation interpreted with *Quand P,Q*:

- (6) a. *Quand Pierre est entré, Marie a décroché son téléphone.*
- b. *Quand Marie a décroché son téléphone, Pierre est entré.*

## 1.3 Problem

Sandström (1993) notices that *When P,Q* is sometimes not as felicitous as a sequence of main clauses if one wants to express a temporal succession of events. This problem arises when  $e_P$  is a *culminated process* or a *point*.

- (7) *He raised the glass to his mouth, emptied it in one gulp, burped loudly and set the glass back on the counter.* (Sandström 1993: 58)
- (8) a. *When he raised the glass to his mouth, he emptied it in one gulp.*
- b. *When he emptied the glass he burped loudly.*
- c. *When he burped he set the glass back on the counter.* (Sandström 1993: 70)

Only the corresponding perfect optimally expresses temporal succession:

- (9) *When he **had raised** the glass to his mouth, he emptied it in one gulp.*

Borillo (1988) notices the same problem with *Quand P,Q* in french:

- (10) a. *Quand il **eut traversé** la rue, il s'assit sur le bord du trottoir.* (Borillo 1988: 84)
- b. ? *Quand il **traversa** la rue, il s'assit sur le bord du trottoir.*

## 2. Sandström (1993)

Sandström's theory of narrative discourse aims at a unified account of the temporal relation:

- between  $e_P$  and  $e_Q$  in *when P, Q*;
- between  $e_1$  and  $e_2$  in a sequence of main clauses.

Her theory of *when* accounts for the fact that not every sequence of main clauses can be rephrased by *When P, Q*.

### 2.1 The temporal structure of narrative discourse

According to Sandström (1993):

- Interpreting a narrative discourse involves the construction of an *episodic structure*  $\mathcal{E}$ , defined as a dynamic structure consisting of events and E-states (for “episodic states”).
- An event sentence introduces a new event referent  $e_n$  which has to be incorporated into  $\mathcal{E}$ .
- Incorporating  $e_n$  into  $\mathcal{E}$  has the effect of bringing  $\mathcal{E}$  to a new stage, E-state( $\mathcal{E}_n$ ), which coincides with the time at which  $e_n$  *has just occurred*.
- Consequentiality is the coherence principle of narrative discourse: a new event incorporated in  $\mathcal{E}$  must be consequentially related to  $\mathcal{E}$ . This condition can be satisfied through three subrelations :

**Causation:** the last event  $e_{n-1}$  in  $\mathcal{E}_{n-1}$  causes  $e_n$ ;

(11) *Sue put poison in her husband's whisky. He died.*

**Response:** the last event  $e_{n-1}$  in  $\mathcal{E}_{n-1}$  evokes  $e_n$  as a response;

(12) *I smiled at him and he began to cry.*

**Enablement:** E-state( $\mathcal{E}_{n-1}$ ), the E-state reached by incorporating  $e_{n-1}$  into  $\mathcal{E}_{n-2}$ , forms the appropriate conditions for  $e_n$  to take place, when E-state( $\mathcal{E}_{n-2}$ ) did not form such conditions.

(13) *He raised the glass to his mouth and emptied it in one gulp.*

### 2.2 The effect of the semantics of *when*

- “When is assumed to mark one clause as an adverbial, to be used in the interpretation of the other.” (p. 183)
- “a when-clause is a temporal adverbial, where a temporal adverbial is any non-argument constituent of a sentence which provides a temporal referent (from the time realm or from the event realm) to be used in interpreting the claim made by the sentence as a whole.” (p. 184)
- “*Event-type predicates* in when-clauses pick out an event as adverbial denotation.” (p. 218)

According to Sandström,  $e_Q$  has to be related to  $e_P$  (the referent provided by *When P*) by one of the subrelations of *consequentiality*. This is sufficient to account for the difference between (13) and (8a):

(13) *He raised the glass to his mouth and emptied it in one gulp.*

(8a) *When he raised the glass to his mouth, he emptied it in one gulp.*

In (13),  $e_P$  brings  $\mathcal{E}$  to a new E-state which enables  $e_Q$ . But in (8a), the result state of  $e_P$  is not part of the denotation of *When P*. Thus, the same relation as in (13) is not available.

The relations of *causation* and *response* do not require any result state. Thus, (11) and (12) can be rephrased in (14) and (15):

(14) *When Sue put poison in her husband's whisky, he died.*

(15) *When I smiled at him, he began to cry.*

### 2.3 Problem

The consequentiality relation that accounts for the temporal ordering in *When P, Q* is “specifically a coherence principle for *narrative discourse*” (Sandström 1993: 143). Now, we can doubt that (16) forms a narrative discourse. Nevertheless, the temporal ordering seems to be the same:  $e_P$  precedes  $e_Q$ .

(16) *Mes robes se sont froissées quand elles ont été entassées dans l'armoire par Elise.*

(Pacelli Pekba 2003: 249)

(17) ? *Mes robes ont été entassées dans l'armoire par Elise quand elles ont été froissées.*

Therefore, the temporal succession interpreted in *Quand P, Q* would be better accounted for without the use of a coherence principle that is specific to the narrative discourse.

### 3. De Swart (1999)

De Swart (1999) assumes that the semantics of *when* is a relation of temporal overlap. She uses the DICE system (Lascarides and Asher 1993) to account for the sequential ordering that can be interpreted with *When P, Q*.

She claims that, unlike other temporal connectives (before, after...), *when* has a *weak* semantics which can be overruled by a rhetorical relation. For instance, if  $Q$  is attached to  $P$  by a rhetorical relation of *result*, it triggers the inference that  $e_P$  precedes  $e_Q$ :

(18) *When the president asked who would support him, Jill raised her hand.* (De Swart 1999: 355)

According to De Swart, simultaneity only arises if *When P* is postponed and focussed. In this case, no rhetorical relation can be established between the two clauses, and the semantics of *when* is not overruled. Indeed:

1°) If *When P* is postponed and focussed, *When P* does not provide the temporal antecedent for  $Q$ . Consequently,  $Q$  is not attached to the discourse structure by a rhetorical relation with  $P$ , but with a rhetorical relation with the preceding discourse.

2°) Because of his presuppositional character, a time adverbial needs not be attached to the discourse structure by means of a rhetorical relation with the preceding discourse. So, given that *When P* is an adverbial,  $P$  cannot be attached to  $Q$ .

## Problems

1°) We can discuss the claim that *when* establishes a relation of simultaneity if *When P* is postponed and focussed :

(19) *The president asked who would support him when Jill raised her hand.* (De Swart 1999: 355)

2°) As noticed by De Swart (1999), some rhetorical relations that are available in a sequence of independent clauses are not available in *When P,Q*, even if *When P* is preposed :

(20) ? *When John drank his beer he left the pub.* (De Swart 1999: 359)

(21) ? *When Max fell, John pushed him.* (De Swart 1999: 358)

The relation of *narration* is unavailable in (20); *explanation* is unavailable in (21).

## 4. A relation between an event and an instant

“La subordonnée à *quand* temporel présente un référent temporel comme *le temps d'une situation/événement e1.*” (Vogeleer 1999: 302)

“D'abord, *quand* se combine à la subordonnée, sélectionne la trace temporelle de son éventualité et la met en relation avec un intervalle *i*. Ensuite, cet intervalle va localiser l'intervalle d'assertion de la principale comme le ferait une expression localisante.” (Schaden 2007: 158)

**Hypothesis 1:** *quand* is an instruction to use  $\tau(e_P)$  - the “temporal trace” of  $e_P$  - as the referent of a time adverbial in the interpretation of *Q*.

Consider the temporal relation that holds between an event and the referent of a time adverbial :

It is well known that “frame adverbials” (Bennett and Partee 1978) or “extended adverbials” (Sandström 1993) denote an interval of time that includes the event described by the sentence.

According to the hypothesis 1, if  $\tau(e_P)$  is an extended interval of time, then  $e_Q$  has to be included in  $\tau(e_P)$  :

(22) *Quand il traversa la salle, il rencontra son frère.* (Olsson 1971: 49)

(23) ? *Quand il traversa la rue, il s'assit sur le bord du trottoir.* (adapted from Borillo 1988: 84)

The parallel between punctual adverbials and *Quand*-clauses where  $e_P$  is a punctual event gives rise to further discussion.

### 4.1 Laca (2005)

Following Vet (2002), Laca (2005) claims that in (24), the relation between the event and the time denoted by the adverbial can be accounted for with the use of the notion of coercion:

(24) *À 11h30, Marie-Cécile déjeuna.*

Since 11h30 cannot include the whole event, we interpret the sentence as describing the beginning of the event, so that this beginning can be included in 11h30.

According to Laca (2005), the sequential ordering of the events in (25) can be accounted for in the same way:

(25) *Quand nous arrivâmes à la maison, Marie pleura.*

This approach allows us to account for the fact that  $e_Q$  cannot precede  $e_P$

- without the help of the narrative coherence principle of *consequentiality*;
- without the help of a rhetorical relation of *result*.

## 4.2 Problem

Laca's approach only predicts a temporal succession if  $e_P$  is punctual while  $e_Q$  is not. Nevertheless, we interpret a temporal succession in (26 a-b), where both events are punctual.

(26) a. *Quand Pierre éternua, Marie sursauta.*  
b. *Quand Marie sursauta, Pierre éternua.*

Considering *Quand P,Q* sentences where  $e_P$  is punctual, Olsson (1971) proposes the following analysis:

“La première action est entièrement terminée avant que la deuxième ait lieu. Aussi ne peuvent-elles coïncider sur aucun point de leur durée. Il n'est pas question de simultanéité, même partielle, ici.” (Olsson 1971: 41)

The interpretation of (26) confirms this analysis.

## 5. Proposition

If we aim at a unified account of

1°) the temporal relation between  $e_Q$  and  $\tau(e_P)$  in a *Quand P,Q* sentence and  
2°) the temporal relation between an event and the referent of an adverbial in a simple sentence,  
we can formulate the following hypothesis:

**Hypothesis 2:** If a punctual adverbial locates an event, the referent of the adverbial *strictly precedes* the event.

This hypothesis accounts for

- the fact that a temporal succession is interpreted with *Quand P,Q* in narrative as well as in non-narrative discourse ;
- the fact that the rhetorical relation of *explanation* cannot attach *Q* to *P*.

However, it does not account for the inference of a causal link between  $e_P$  and  $e_Q$  in *Quand P,Q* sentences.

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