

Das auch so:
Anaphoric reference to event predicates and event predicate modifiers

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1. Introduction

Our topic: event predicates, event predicate modifiers and anaphoric reference to each of these

- 1) a. Bill kissed Mary
- b. Bill kissed Mary with passion.
- c. Bill kissed Mary. He did it with passion.
- d. Bill kissed Mary with passion. Steve didn't kiss her like that

Standard Neo-Davidsonian account of manner modification of event predicates (Davidson 1967; Parsons 1990; Landman 2000)

- Event verbs (verb phrases, sentences) are event predicates (type $\langle ev t \rangle$)
kiss Mary $\rightarrow \lambda e$ [kissing(e) & Theme(e, mary)]
- Manner modifiers (adverbs, PPs) are event predicate modifiers (type $\langle\langle ev t \rangle \langle ev t \rangle\rangle$)
with passion $\rightarrow \lambda P \lambda e$ [P(e) & passionate(e)]
- Anaphoric elements can refer back to event predicates
Bill kissed Mary. He did it with passion
it $\rightarrow \lambda e$ [kissing(e) & Theme(e, mary)]
did $\rightarrow \lambda P \lambda e$ [P(e)]

Less studied lexical items (our central interest here):

- Anaphoric elements that refer back to event modifiers
like that $\rightarrow \lambda P \lambda e$ [P(e) & passionate(e)]

In particular the German anaphoric manner modifier *so* is used this way:

- 2) Maria ist *über Dresden* nach Prag gefahren. Peter ist **so** nach Bratislava gefahren.
"Maria drove to Prague via Dresden. Peter drove to Bratislava that way."

fahren $\rightarrow \lambda e$ [drive(e)]

nach Prag $\rightarrow \lambda P \lambda e$ [P(e) & to(e,prag)]

nach Bratislava $\rightarrow \lambda P \lambda e$ [P(e) & to(e,bratislava)]

über Dresden $\rightarrow \lambda P \lambda e$ [P(e) & via(e,dresden)]

so $\rightarrow \lambda P \lambda e$ [P(e) & via(e,dresden)]

ist so nach Bratislava gefahren $\rightarrow \lambda e$ [drive(e) & to(e, bratislava) & via(e,dresden)]

Central concern: Puzzles about the uses of *so* – cases in which it takes as antecedent something other than a manner modifier:

3) Maria ist nach Barcelona geflogen. Peter ist auch *so* gekommen.
 “Maria flew to Barcelona. Peter also got there that way.”

4) Maria und Peter sind beide nach Barcelona gereist.
 “Maria and Peter both traveled to Barcelona.”
 Maria ist geflogen. Peter hat das auch *so* gemacht.
 “Maria flew. Peter went by air too.”

Our Questions:

- How does manner adverbial anaphora work? What constraints are there on this process?
- How does an event predicate get reinterpreted as a manner modifier?
- What are the constraints on this reinterpretation process?

2. Event and Event-modifier Anaphora

2.1 Uses of German *das* and *so*

German neuter demonstrative *das* can be used to refer to **events** or to **event types**

- 5) a. Maria ist nach Barcelona geflogen. Peter hat *das* auch gemacht. **type**
 “Maria flew to Barcelona. Peter did that too.”
 b. Peter ist gestern mit dem Daimler gekommen. Anna hat *das* gesehen. **token**
 “Peter came yesterday with a Daimler. Anne saw that.”

Other uses of *das*: **individual**, **fact**, **proposition** reference:

- 6) a. Anna hat ein neues Kleid. **Das** ist aus Seide. **individual**
 b. Anna hat die Prüfung bestanden. **Das** ist erfreulich. **fact**
 c. Peter sagt, dass Anna hat die Prüfung bestanden hat. Ist **das** wahr? **proposition**

Anaphoric event-modifier reference: *So* can be used to refer to manner PPs:

- 7) Maria ist über Dresden nach Prag gefahren. Peter ist **so** nach Bratislava gefahren.

Similar manner anaphoric elements are *anders* and *ähnlich* (we will focus on *so*)

- 8) a. Maria ist über Dresden nach Prag gefahren. Peter ist **anders** gefahren.
 b. Maria ist über Dresden nach Prag gefahren. Peter ist **ähnlich** gefahren

So is often seen accompanied by *auch* “also”:

- 9) a. Maria ist über Dresden nach Prag gefahren. Peter ist **auch so** gefahren.
 b. Maria ist mit dem Zug gekommen. Peter ist **auch so** gekommen.
 c. Maria hat ihr Auto auf Kredit gekauft. Peter hat sein Motorrad **auch so** finanziert.
 d. Maria hat sich als Clown kostümiert. Peter hat sich **auch so** verkleidet

So apparently restricted from having simple adverbs (and certain PPs) as antecedent

- 10) a. Maria hat laut gesungen. *Hans hat auch *so* gesungen.
 b. Maria hat wie eine Tote geschlafen. *Hans hat auch *so* geschlafen

Other uses of *so*: **comparative, exclamatory**:

- 11) a. Steve ist **so** gross, dass er die Bücher aus dem Schrank raumen kann.
b. **So** ein schönes Fahrrad!

These anaphoric elements frequently appear together:

- 12) a. Maria ist mit dem Zug nach Barcelona gefahren. Peter hat das auch so gemacht.
“Maria rode to Barcelona by train. Peter did that too.”
b. Maria hat die Kartoffeln mit dem Löffel gegessen. Hans hat das auch so gemacht
(aber Susanne wollte lieber eine Gabel haben).
“Maria ate the potatoes with a spoon. Hans also did it that way (but Susanne wanted a fork instead).”

2.2 Basic Analysis

We assume straightforward (higher-order) treatment of event-type and manner-modifier anaphora:

- 13) Maria ist über Dresden nach Prag gefahren. Peter ist so nach Bratislava gefahren
14) Maria ist [_{PP} mit dem Zug]₁ [_{VP} nach Barcelona gefahren]₂. Peter hat das₂ auch so₁ gemacht.

Event-type (-> *nach Barcelona fahren, die Kartoffeln essen, ...*)
Manner-modifier (-> *mit dem Zug, mit dem Löffel, ...*)

Standard Davidsonian-style account:

- 15) a. [[nach Barcelona fahren]] = λe [drive(e) & to(e,barcelona)]
b. [[mit dem Zug]] = $\lambda P \lambda e$ [by-train(e) & P(e)]

Anaphoric element takes denotation from antecedent:

- 16) a. [[das₂]] = λe [drive(e) & to(e,barcelona)]
b. [[so₁]] = $\lambda P \lambda e$ [by-train(e) & P(e)]

2.3 Two Details: *machen* und *auch*

Light-verb *machen* is like English *happen* or *occur* (Parsons' (1990) “higher order verbs”: no meaning of their own – serve to introduce tense/aspect (which we are ignoring):

- 17) [[machen]] = $\lambda P \lambda e$ [P(e)]

Focus sensitive, presuppositional *auch* (like English *too* or *also*) introduces distinctiveness presupposition:

- 18) [[auch]] = $\lambda P \lambda e \exists e'$ [P(e) & P(e') & e \neq e']

We assume that *auch* operates at the VP level (but the details are not relevant, or of interest to us here), that the subject is introduced independently and that a form of existential closure applies:

$$\begin{aligned}
 19) \text{ (Er hat) } & [[\text{das auch so gemacht}]] = [[\text{auch}]] ([[so]] ([[machen]] ([[das]]))) \\
 & = \lambda P \lambda e \exists e' [P(e) \ \& \ P(e') \ \& \ e \neq e'] (\lambda P \lambda e [\text{by-train}(e) \ \& \ P(e)] \\
 & \quad (\lambda P \lambda e [P(e)] ([\lambda e [\text{drive}(e) \ \& \ \text{to}(e, \text{barcelona})]]))) \\
 & = \lambda e \exists e' [\text{by-train}(e) \ \& \ \text{drive}(e) \ \& \ \text{to}(e, \text{barcelona}) \ \& \\
 & \quad \text{by-train}(e') \ \& \ \text{drive}(e') \ \& \ \text{to}(e', \text{Barcelona}) \ \& \ e \neq e']
 \end{aligned}$$

2.4 Problems for the Straightforward Analysis

Problem A: Cases in which there are no manner adverbial antecedents for *so*

- 20) a. Maria ist nach Barcelona geflogen. Peter ist auch *so* nach Barcelona gereist. [so = by air]
 "Maria flew to Barcelona. Peter also traveled to Barcelona by air"
 b. Maria hat den Fisch gekocht. Hans hat den Fisch auch *so* zubereitet. [so = by boiling]
 "Maria boiled the fish. Hans also prepared the fish by boiling it."
 c. Maria hat den Termin abgesagt. Peter hat auch *so* reagiert. [so = by canceling the appointment]
 "Maria canceled the appointment. Peter also reacted this way."

Intuitively antecedent is the VP - there are even cases in which *das* and *so* compete for antecedent:

- 21) a. Maria ist nach Barcelona geflogen. Peter ist auch **so** gekommen.
 b. Maria ist nach Barcelona geflogen. Peter hat **das** auch gemacht.
 c. Maria ist nach Barcelona geflogen. *Peter hat **das** auch **so** gemacht.

Technical issue: how to turn event predicate (type $\langle ev \ t \rangle$) into event predicate modifier (type $\langle \langle ev \ t \rangle \ \langle ev \ t \rangle \rangle$)

Potential solutions:

- Treat modifiers as event predicates as well (all predicates are of type $\langle ev \ t \rangle$) and add modification rule (as in Heim & Kratzer 1998)

<u>Anaphoric element</u>	<u>Antecedent</u>
$so_{\langle ev, t \rangle} \text{ gekommen}_{\langle ev, t \rangle}$	$mit \ dem \ Zug_{\langle ev, t \rangle} \text{ gekommen}_{\langle ev, t \rangle}$
$so_{\langle ev, t \rangle} \text{ nach } B \text{ gereist}_{\langle ev, t \rangle}$	$fliegen_{\langle ev, t \rangle}$

- Use a type-raising operator to transform event predicates into predicate modifiers:

$$MOD = \lambda Q \lambda P \lambda e [P(e) \ \& \ Q(e)]$$

<u>Anaphoric element</u>	<u>Antecedent</u>
$so_{\langle ev, t \rangle} \text{ gekommen}_{\langle ev, t \rangle}$	$mit \ dem \ Zug_{\langle ev, t \rangle} \text{ gekommen}_{\langle ev, t \rangle}$
$MOD(so_{\langle ev, t \rangle})_{\langle ev, t \rangle} \text{ nach } B \text{ gereist}_{\langle ev, t \rangle}$	$fliegen_{\langle ev, t \rangle}$

- Decompose the verb meaning – allow *fliegen* to mean travel by air

<u>Anaphoric element</u>	<u>Antecedent</u>
$so_{\langle ev, t \rangle} \text{ gekommen}_{\langle ev, t \rangle}$	$mit \ dem \ Zug_{\langle ev, t \rangle} \text{ gekommen}_{\langle ev, t \rangle}$
$so_{\langle ev, t \rangle} \text{ nach } B \text{ gereist}_{\langle ev, t \rangle}$	$fliegen_{\langle ev, t \rangle} \text{ -->}$ $mit \ dem \ Flugzeug_{\langle ev, t \rangle} \text{ reisen}_{\langle ev, t \rangle}$

We adopt the type raising (MOD operaor) account:

- 22) Maria ist nach Paris geflogen. Peter ist *so* nach Barcelona gereist.
nach Barcelona reisen -> $\lambda e [\text{traveling}(e) \ \& \ \text{to}(e, \text{barcelona})]$
so -> $\lambda e [\text{flying}(e)]$
 $MOD(so) \text{ --> } \lambda P \lambda e [P(e) \ \& \ \text{flying}(e)]$
so nach Barcelona reisen -> $\lambda e [\text{traveling}(e) \ \& \ \text{to}(e, \text{barcelona}) \ \& \ \text{flying}(e)]$

Problem B: Constraints on Modification – not all event predicates can work as modifiers.

- 23) Maria hat [ein Buch gelesen] und [Rotwein getrunken]. ??Peter hat das auch so gemacht.
 “Maria read a book and drank red wine. Peter also did it that way.”

ein Buch lesen -> $\lambda e \exists x [\text{reading}(e) \ \& \ \text{book}(x) \ \& \ \text{Theme}(e,x)]$
Rotwein trinken -> $\lambda e \exists x [\text{drinking}(e) \ \& \ \text{redwine}(x) \ \& \ \text{Theme}(e,x)]$
das -> $\lambda e \exists x [\text{reading}(e) \ \& \ \text{book}(x) \ \& \ \text{Theme}(e,x)]$
so -> $\lambda e \exists x [\text{drinking}(e) \ \& \ \text{redwine}(x) \ \& \ \text{Theme}(e,x)]$
MOD(so) -> $\lambda P \lambda e \exists x [P(e) \ \& \ \text{drinking}(e) \ \& \ \text{redwine}(x) \ \& \ \text{Theme}(e,x)]$

In principle *das auch so gemacht* ->

$\lambda P \lambda e \exists x [P(e) \ \& \ \text{drinking}(e) \ \& \ \text{redwine}(x) \ \& \ \text{Theme}(e,x)] (\lambda e \exists x [\text{reading}(e) \ \& \ \text{book}(x) \ \& \ \text{Theme}(e,x)]) =$
 $\lambda e \exists x [\text{drinking}(e) \ \& \ \text{redwine}(x) \ \& \ \text{Theme}(e,x) \ \& \ \text{reading}(e) \ \& \ \text{book}(x) \ \& \ \text{Theme}(e,x)]$

- 24) Maria hat ein Buch gelesen. ??Peter hat so Rotwein getrunken.
 “Maria read a book. Peter drank redwine that way.”

For one event predicate to be used to modify another the predicates must have a particular semantic relation: One must be a “way” of realizing the other (an Elaboration)

- 25) a. Maria ist nach Barcelona geflogen. Peter ist auch so nach Barcelona gereist. [so = by air]
 “Maria flew to Barcelona. Peter also traveled to Barcelona by air”
 b. Maria hat den Fisch gekocht. Hans hat den Fisch auch so zubereitet. [so = by boiling]
 “Maria boiled the fish. Hans also prepared the fish by boiling it.”
 c. Maria hat den Termin abgesagt. Peter hat auch so reagiert. [so = by canceling the appointment]
 “Maria canceled the appointment. Peter also reacted this way.”

One test for Elaboration: Incompatibility with *dabei* ‘while’

- 26) a. Peter ist nach Barcelona gereist. ??Dabei ist er geflogen.
 b. Hans hat den Fisch zubereitet. ??Dabei hat er es gekocht.
 c. Peter hat reagiert. ??Dabei hat er den Termin abgesagt.

Another is the use of *indem*

- 27) a. Peter und Anna haben beide die Prüfung bestanden.
 Peter hat dem Prüfer sämtliche Daten aufgezählt. Anna hat das auch so gemacht.
 b. Anna hat die Prüfung bestanden, indem sie dem Prüfer sämtliche Daten aufgezählt hat.
 28) a. Maria und Anna tun was für ihre Gesundheit.
 Maria geht jeden morgen schwimmen. Anna macht das auch so.
 b. Maria tut was für ihre Gesundheit, indem sie jeden morgen schwimmen geht.

3. Elaboration and the *indem* relation

3.1 The connective *indem*

indem ('in', 'by'): modal/instrumental subjunction;

An *indem* clause characterizes the way the goal described in the matrix clause is achieved (Duden 2005).

There are other uses of *indem* clauses (e.g. temporal), which are not relevant here

Two uses of the subjunction *indem* have to be distinguished:

— **instrumental / causal *indem***

Q *indem* P: "P causes Q"

indem may be substituted by *dadurch dass* ('by')

29) Die Täter verschafften sich Zugang, indem/dadurch dass sie über ein Hoftor kletterten und ein Fenster aushebelten. (Duden 2005)

'The suspects entered by breaking a window'

30) Der Wirkstoff stillt den Hustenreiz, indem/dadurch dass es das Hustenzentrum im Gehirn lahm legt. (Google)

'The substance stops cough by paralyzing the cough center in the brain.'

— **modal *indem***

Q *indem* P: "Q is instantiated by P"

no substitution by *dadurch dass*

31) Renate trank den Kognak, indem / *dadurch dass sie ihn in einem Zug hinunterkippte.

'Renate drank the cognac by downing the glass in one.

(Duden 2005)

32) Er löste sein Problem, indem / ??dadurch dass er sich Hilfe beschaffte.

'He solved the problem by getting help.

(Duden 2005)

3.2 Behrens & Fabricius-Hansen (2002) on *indem*

Behrens & Fabricius-Hansen (2002) investigate the discourse relation of ELABORATION and the means by which it is expressed in English, Norwegian and German (e.g. *by* phrases, *ved å* phrases, *indem* clauses)

They characterize *indem* as follows: "*Indem* requires that we understand S2 as describing the same eventuality as S1 in a more specific or less abstract manner."

Following Behrens & Fabricius-Hansen, in a sentence "S1 *indem* S2" the eventuality established in S1 may represent a causally structured event complex (Kamp & Rossdeutscher 1994) with S2 specifying the causing subevent (cf. instrumental/causal use above), or it may be of some other, unstructured type instantiated by events having the properties specified in S2 (cf. modal use).

In both cases: agent(e2) = agent(e1),
time(e2) \subseteq time(e1)
situation-type(e1) = situation-type(e2) (typically)

33) Etwas blitzte in ihren Augen auf, ein Gefühl, das sie verbarg, indem sie die Augen niederschlug. (Behrens & Fabricius-Hansen 2002, ex. 2b)

'A look flashed through her eyes, some emotion she concealed by dropping her gaze.'

Behrens & Fabricius-Hansen furthermore claim that *indem* typically establishes a relation of ELABORATION between matrix and subordinate clause, or the corresponding DRSEs.

Discourse relation of ELABORATION:

"[...] one clause expands another by elaborating on it (or some portion of it): restating in other words, specifying in greater detail, commenting, or exemplifying" (Halliday 1994)

In SDRT (Asher 1993) ELABORATION is regarded as a structural (interacting, e.g., with contrastive topics) and a semantic relation (expressing a certain meaning). It is roughly described by (following Asher & Vieu 2005):

ELABORATION (α ; β) iff the main eventuality described in β is a subsort of the main eventuality described in α ,
or the proposition associated with β defeasibly implies that associated with α .
(where α and β are discourse segments)

In Behrens & Fabricius-Hansen (2002) the ELABORATION relation induced by, e.g., *indem* is compared to the discourse relation of ACCOMPANYING CIRCUMSTANCE expressed, e.g., by *dabei/wobei* ('at the same time'). While with ELABORATION the related segments describe the same eventuality, ACCOMPANYING CIRCUMSTANCE requires that e1 and e2 are different eventualities.

34) Harris gähnte und stellte dabei seine scharfen Zähne und die leberfarbene Zunge zur Schau.
'Harris yawned, displaying his sharp teeth and liver-coloured tongue.'
(Behrens & Fabricius-Hansen 2002)

3.3 *So* presupposes ELABORATION

We have shown above that our *das-auch-so* examples can be rephrased by using *indem*. Following (Behrens & Fabricius-Hansen 2002), *indem* establishes an ELABORATION relation. It is well known that discourse relations may either be indicated by overt expressions or be inferred.

==> In the *das-auch-so* examples, the first and second sentence (discourse segment) are related by ELABORATION.

Hypothesis:

If it refers to an event predicate (as in the *das-auch-so* examples), *so* presupposes an ELABORATION relation between the discourse segments specifying the antecedent of *das* and the antecedent of *so*.

- 37) a. Maria hat das Problem mit den Studiengebühren gelöst, indem sie einen Kredit aufgenommen hat. Peter hat das auch so gemacht.
'Maria solved the problem of the tuition fees by taking a loan. Peter also did it that way.'
- b. Maria und Peter haben beide das Problem mit den Studiengebühren gelöst. Maria hat einen Kredit aufgenommen. Peter hat das auch so gemacht.
'Maria and Peter solved the problem of the tuition fees. Maria took a loan. Peter also did it that way.'

a, b: – ELABORATION (maria-solved-the-problem, maria-took-a-loan)

– *das* = solve-the-problem, *so* = take-a-loan

– ELABORATION (peter-solved-the-problem, peter-took-a-loan)

***so* cannot refer to an event predicate occurring in ACCOMPANYING CIRCUMSTANCE:**

- 38) a. Maria hat ein Buch gelesen und dabei Rotwein getrunken. Peter hat das auch so gemacht.
'Maria read a book. At the same time she drank red wine. Peter also did it that way.'

ACCOMPANYING CIRCUMSTANCE (maria-read-a-book, maria-drank-red-wine)

no reading: "Peter also read a book and at the same time drank red wine"
das ≠ read-a-book, *so* ≠ drink-red-wine

there is a reading:

das = some previously mentioned predicate Q (e.g., *relax from teaching*)

so = read a book and drink-red-wine

habitual reading:

- b. Maria hat abends meistens ein Buch gelesen und dabei Rotwein getrunken. Peter hat es/das auch so gemacht.

'In the evening Maria usually read a book and at the same time drank red wine. Peter also did it that way.'

es/das = spend the evening

so = read a book and drink-red-wine

***so* imposes an ELABORATION interpretation on previous discourse segments:**

- 39) a. Maria und Peter haben beide das Problem gelöst.

- b. Maria ist nach Barcelona geflogen.

'Maria and Peter both solved the problem. Maria flew to Barcelona.'

(a) + (b) +

- c. Sie braucht ein bisschen Ruhe. 'She wants to relax'

NARRATION (maria-and-peter-solved-the-problem, maria-flew-to-Barcelona)

(a) + (b) +

- d. Peter wird das auch machen. 'Peter will also do that.'

das = fly to Barcelona

NARRATION (maria-and-peter-solved-the-problem, maria-flew-to-Barcelona)

ELABORATION (maria-solved-the-problem, maria-flew-to-Barcelona)

(a) + (b) +

- e. Peter wird das auch so machen. 'Peter will also do it that way.'

das = solve the problem, *so* = fly to Barcelona

~~NARRATION (maria-and-peter-solved-the-problem, maria-flew-to-Barcelona)~~

ELABORATION (maria-solved-the-problem, maria-flew-to-Barcelona)

ELABORATION (peter-solved-the-problem, peter-flew-to-Barcelona)

3.4 Constraints on *so*

What are the constraints for the anaphor *so* to refer to an event predicate instead of an event modifier?

So can refer to an event predicate P iff there is a predicate Q such that ELABORATION (α_Q , β_P), where α_Q and β_P are discourse segments such that Q and P apply to the (main-) events specified in these segments.

When can P and Q stand in an elaboration relation? In what circumstances can an event predicate P modify an event predicate Q? What are the constraints on the use of *indem* ?

4 "Abstract" predicates

Many predicates that license *indem*-clauses are "abstract" in that they do not specify what is actually going on. In English, such predicates combine with, e.g., *by*-adjuncts. Kearns (2003) and Sæbø (to appear) distinguish two varieties:

- (a) *manner-neutral causative predicates*
- (b) *criterion predicates*

- (a) *manner-neutral causative predicates* (Sæbø) (Kearns: *causative upshot predicates*) are unspecific in the way in which the change of state is brought about.
Examples: *cure the patient, convince, create a fiction, ruin my reputation, surprise the nation, ...*
- (b) *criterion predicates* require that the event described meets certain conventional criteria and are unspecific about the physical action performed in the event.
Examples: *solve the problem, obey an order, fulfill someone's expectations, keep a promise, prove a theorem, do someone a favour, take revenge, give way ...*

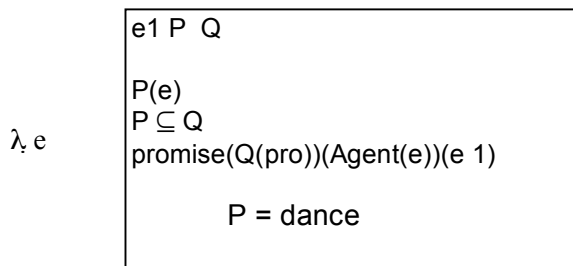
(Note that in German manner-neutral causative predicates will combine with the causal/instrumental use of *indem*, whereas criterion predicates combine with its modal use.)

Kearns (2003) investigates aspectual properties: Both *manner-neutral causative predicates* and *criterion predicates* lack process progressives despite being durative. She calls them "durative achievements".

Sæbø (to appear) focuses on representation issues: How to represent such events and how to derive such a representation compositionally? The core idea is that abstract predicates introduce an indefinite predicate variable which is specified by the *by*-phrase. For representation, he uses variant of DRT where composition is given by unification instead of functional application, cf. Bende-Farkas and Kamp (2001), Kamp (2001).

40) She kept a promise by dancing. (Sæbø's example 21)

41)
keep a promise by dancing



The event predicate *keep a promise* introduces an additional predicate variable **P** to be identified with the way the promise is realized, i.e. the predicate given in the *by*-adjunct.

The complex event predicate "*A keeps a promise by dancing*" shown in (41) applies to an event **e** iff **e** is of type "*A dances*" and there is an event **e1** and a predicate **Q** such that **e1** is of type "*A promised to Q*" (e.g. *A promised to cheer him up*). The contribution of the *by*-adjunct (variable P) is included in Q, that is, *dance* is one way of realizing **Q** (cf. Fabricius-Hansen 2006).

Remaining question: Which predicates are "abstract" (*criterion predicates* or *manner-neutral causative predicates*) introducing an additional predicate variable to be instantiated by the concrete action?

Sæbø observes that *by*-phrases do adjoin to predicates which do not appear abstract, and concludes that predicates which are not normally "abstract" may be interpreted as being criterial or manner-neutral causative, if, e.g., followed by a *by*-phrase. This implies that any event predicate might have an "abstract" counterpart. In (42), for example, *swim* will be interpreted as the "abstract" form of *swim*.

42) It swims by flexing its body from side to side (Sæbø's example 39)

Still, Sæbø lists some predicates which seem to be too concrete or manner-specific to be interpreted as being criterial or manner-neutral causative.

43) ?? Fred combed his hair / put on his hat / polished his nails by ... (Sæbø's ex. 18)

Fabricius-Hansen (2006) discusses Sæbø's account and relates it to Norwegian *ved å* phrases and German *indem* clauses (which may be translated as *by*-phrases).

She is sceptical as to whether "abstract" predicates should be distinguished from "concrete" ones, in the sense of a lexical ambiguity, and she points out that even predicates like *comb one's hair / put on one's hat* may be specified by a *by*-phrase, if done in a non-standard way.

44) Er kämte sein Haar, indem er es mit den Fingerspitzen glatt strich.
'He combed his hair by using his fingers.'

45) Sie hob den Becher, indem sie die rechte Hand mit der linken führte.
'She lifted the cup supporting the right hand by the left hand.'

46) Renate trank den Kognak, indem sie ihn in einem Zug hinunterkippte.
'Renate drank the cognac by downing it in one gulp.'

4.1 Constraints on elaboration

In what circumstances can an event predicate P modify an event predicate Q?

What are the constraints on the use of *indem* ?

- Event predicates that can be modified by an event predicate include manner neutral causative predicates and criterion predicates (but how to distinguish them from "concrete" predicates?)
- Constraints on predicates modifying/specifying manner neutral causative predicates and criterion predicates include:

same verb excluded

- 47) a. *Er trank den Wein, indem er ihn langsam trank.
'He drank the wine drinking it slowly.'
- b. * Er half der Oma, indem er ihr sehr liebevoll half.
'He helped his grandma helping her with affection.'

(although the matrix predicate subsumes the modifying one:
langsam-trinken \subset trinken / der-Oma-liebevoll-helfen \subset der Oma helfen)

non-standard way required

48) a.?? Er ging die Treppe herauf, indem er einen Fuß nach dem anderen auf die jeweils höhere Stufe setzte. 'He climbed the stairs by lifting one foot after the other.'

b. ?? Er kämmte sein Haar, indem er einen Kamm benutzte.
'He combed his hair by using a comb.'

Obvious question: Is there another way to do this?

licensed by world-knowledge?

49) a. Er sorgte für Abendbrot, indem er Pizza bestellte.
b. Er sorgte für Abendbrot, indem er Bier bestellte.
c. Er sorgte für Abendbrot, indem er Butter kaufte.
d. Er sorgte für Abendbrot, indem er Maria anrief.
e. Er sorgte für Abendbrot, indem er die Waschmaschine anstellte.
'He provided supper by ordering pizza / ordering beer / buying butter / calling Maria / turning on the washing machine.'

Obvious question: How comes that ordering beer / buying butter / calling Maria / turning on the washing machine can be seen as providing supper?

Obvious reply to (49b-e):

e. Ich finde nicht, dass Bier bestellen / Butter kaufen für Abendbrot sorgen ist.
'I don't consider ordering beer / buying butter etc. providing supper.'

Similarly, (b) and (c) would be natural replies to (a)

50) a. Er löste das Problem mit den Studiengebühren, indem er einen Kredit aufnahm
b. Das ist keine Lösung. 'This is no solution.'
c. Ich finde nicht, dass das eine Lösung ist. 'I don't consider that a solution.'

51) a. Er bewies seine Behauptung, indem er Fotos zeigte.
b. Das ist kein Beweis. 'This is no proof.'
c. Ich finde nicht, dass das ein Beweis ist. 'I don't consider that a proof.'

Criterion predicates (but not causatives) closely resemble the *predicates of personal taste* (e.g. *fun*) discussed in Lasnik (2005), which require a distinctive judge to determine the truth value of the proposition.

5 Conclusion

Event predicate antecedents of *so* must relate via ELABORATION to another event predicate.

==> the antecedent of *so* must itself be a modifier or an elaborating event predicate

Open issues:

- How to spell out the semantics of ELABORATION on the level of events? Is Sæbø's solution adequate?
- Is there a general meaning of the modifier *so* applying to verbal and nominal predicates (*auch so gemacht* vs. *auch so ein Kind*) ?
- How does the modifier *so* relate to the comparative use of *so* (*so groß wie Peter* 'as tall as Peter')

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