What is manner modification?
B09 & C10
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Jaworski's joke

(from Sæbø (2016)

(1) – Headquarters, there's a high yield explosive timed to detonate in four minutes! How do we disarm it?
     – Very carefully! [Jaworski 2009, p. 134]

Evidently, some *how* questions are not meant to be answered with adverbs; for the comic effect to occur, though, it would seem to be essential that they could also be answered with adverbs. (1) thus shows a tension between the intended interpretation and the interpretation taken by the respondent.

According to Jaworski, the asker in (1) asks a *how* question of *method*, whereas the answerer answers a *how* question of *manner*. He distinguishes three types: (i) *how* questions of manner, (ii) 'analytic' *how* questions about means, method, or mechanism, (iii) *how* questions of 'cognitive resolution'. The first type, (i), request a more determinate description of a determinable predicate, the second, (ii), ask for a description of steps contributing to the accomplishment of some activity or procedure, and the

Manner modification: Overview

- "Manner" has so far been used as an intuitive category in semantics, but is it needed?
  - What proposals are there in the literature for modelling "manners"?

- A recurring intuition: Manners are "essential" properties of an event, which define natural "subkinds / subtypes".

  ☞ What is the relevant domain of event attributes that are concerned? Which modifiers are manner modifiers, which ones are not?

- Some consequences and questions resulting from "manners as subtypes of events".

  How do we deal with explicit reference to manner (as entities)?

What is manner? (I)
Approaches using "m" as a primitive

- Schäfer (2013: 189ff.) takes "manner" as an attribute, and as the name of its values (taking up ideas by Dik 1975):

> In one sense, corresponding to the MANNER predicate in (6) and Dik's M predicate in (4) and (5), a manner is a function mapping an eventuality onto its manner. In its second sense, a manner is the specific entity, that is, the m variable in (5) and (6).

(16)   Template for manner adverbials:
        $\lambda Q \, \lambda P \, \lambda x \, [P(x) \, \& \, \exists m \, [\, MANNER \, (x,m) \, \& \, Q(m)]]$

- Piñón (2007): "manner functions" mapping event types onto *m*'s

= m

(12)   a. $\lambda E \lambda e.\mathbf{form}(E)(e)$ ▷ Function from event types and events to form-manners
        b. $\lambda e.\mathbf{form}(\lambda e'.\mathbf{write}(e'))(e)$
                ▷ Function from events to form-manners for the writing event type

What is manner? (II)
Manners as event-kinds (k)

‣ Landman & Morzycki (2003): parallelism between kind-related anaphora and manners in some languages (e.g., German *so*, Polish *tak*).

‣ Kind-related:

a. *Taki* pies uciekł wczoraj w nocy. (Polish)
such.MASC.SG.NOM dog.NOM ran.away yesterday in night
'Such a dog ran away last night.'

b. *Takuju* sobaku my videli. (Russian)
such.MASC.SG.ACC dog.SG.ACC we saw
'We saw such a dog.'

c. Wir haben *so* einen Hund gesehen. (German)
We have such a dog seen
'We saw such a dog.'

Landman & Morzycki (2003)

- Manner anaphora:

  a. On tańczył *tak*.   (Polish)
     he danced thus
     'He danced like that.'

  b. On tantseval *tak*.   (Russian)
     he danced   thus
     'He danced like that.'

  c. Er hat *so* getanzt.   (German)
     He has thus danced
     'He danced like that.'

- Vestiges of this in English. (*So* and *such* are cognate.)

  a. ?He danced (like) so.
  b. Such a dog ran away last night.

Landman & Morzycki (2003)

▸ Parallelism extends to *as* phrases as well.

(5)   Taki   pies   *jak ten* uciekł   wczoraj w nocy. (Polish)
        such.MASC.SG.NOM dog.NOM as   this ran.away yesterday in night
        'Such a dog as this ran away last night.'

(6)   So ein Hund *wie dieser*   hat mal   meinen Bruder gebissen. (German)
        such a dog   as   this.SG.NOM has once my   brother bitten.
        'Such a dog like that once bite my brother.'

(7)   Jan   tańczył   tak *jak Maria*.   (Polish)
        John danced.3.SG.MASC.PAST thus *as* *Mary*
        'John danced this way/the way Mary did.'

(8)   Jan   hat so   *wie Maria* getanzt.   (German)
        John has thus *as*   *Mary* danced
        'John danced this way/the way Mary did.'

Kinds of individuals and events

- Carlson (1977): English *such* (and by extension, Polish *tak* and German *so*) is anaphoric to kinds (either contextually specified, or explicitly given using an *as* phrase).

  a. Such a dog *as this* ran away last night.
  b. Such books *as these* were once read.

  a. People *in the next room…* ??*such* people (are obnoxious)
  b. Elephants *that are standing there…* ??*such* elephants
  c. Men *that Jan fired this morning…* ??*such* men

- What kind of kind do the adverbial (manner) uses of *so* and *tak* refer to?

- Landman and Morzycki (2003): manners are kinds of events, on a par with kinds of individuals. Kinds as a type of entity.

  (13) $[[\mathbf{such}_i]] = \lambda x \,.\, x$ realizes k_i

  (23) $[[\mathbf{tańczył}]] = \lambda e \,.\, e$ is a dancing
        $[[\mathbf{tak}_i]] = \lambda e \,.\, e$ realizes k_i
        $[[\mathbf{tańczył\ tak}_i]] = \lambda e \,.\, e$ is a dancing $\wedge$ e realizes k_i

Anderson & Morzycki (2015)

- Manners not the main focus of A&M. (We focus on degrees.)

- Flesh out a parallel: individual kinds, manners, and degrees have homophonous demonstratives in some languages.
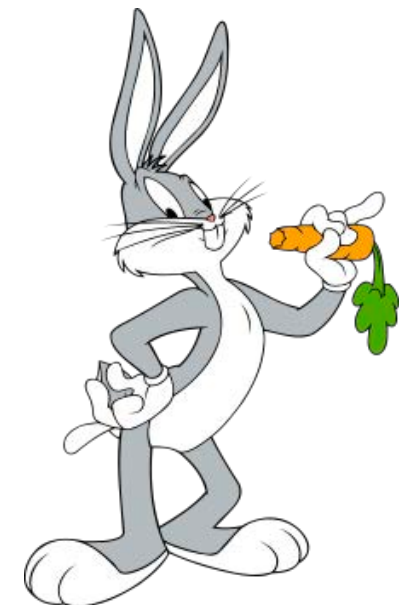
Polish

a. KIND:

taki   pies
such-MASC dog
'such a dog', 'a dog of that kind'

b. MANNER:

tak   się   zachowywać
such REFL behave
'behave that way'

c. DEGREE:

tak   wysoki
such tall
'that tall'

German

a. KIND:

so   einen Hund
such a   dog
'a dog of the same kind'

b. MANNER:

so   getanzt
such danced
'danced like that'

c. DEGREE:

Ich bin so   groß
I   am such tall
'I am this tall.'

Anderson & Morzycki (2015)

▸ Treat anaphora to individual kinds, manners, and degrees as all reflecting anaphora to different sorts of kinds.

▸ Manners as kinds of events, and degrees as kinds of states.

▸ Use Chierchia's (1998) theory of kinds, assuming operators that map between properties of {individuals/events/states} and entity correlates of those properties.

▸ For Chierchia, every kind has corresponding property that is satisfied by realizations of that kind.

  ▸ If Bugs Bunny realizes the kind RABBIT, he satisfies the property of being a rabbit.

  ▸ $^{\cup}$ operator represents the realization relation:
    If Bugs Bunny is a rabbit, then $^{\cup}$RABBIT(Bugs Bunny)

  ▸ In other words, $^{\cup}$RABBIT = **rabbit**
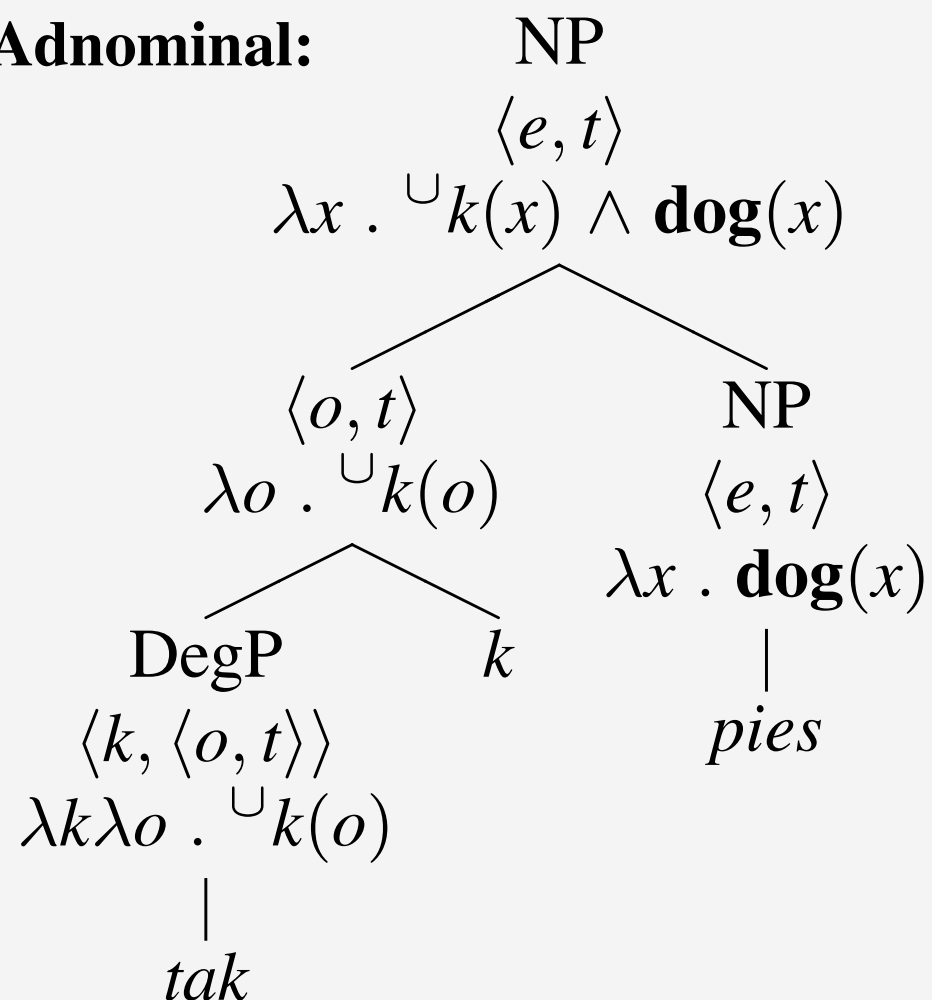
Anderson & Morzycki (2015)

‣ *Such/so/tak* can get an interpretation similar to that of Landman & Morzycki (2003).

(38) $[\![tak]\!] = \lambda k \lambda o \,.\, {}^{\cup}k(o)$

‣ Intersective interpretation for *such/so/tak*, adnominally and adverbially.

Adnominal:

$$
\begin{array}{c}
\text{NP} \\
\langle e, t \rangle \\
\lambda x \,.\, {}^{\cup}k(x) \wedge \mathbf{dog}(x)
\end{array}
$$

$$
\begin{array}{c}
\langle o, t \rangle \\
\lambda o \,.\, {}^{\cup}k(o)
\end{array}
\qquad
\begin{array}{c}
\text{NP} \\
\langle e, t \rangle \\
\lambda x \,.\, \mathbf{dog}(x)
\end{array}
$$

$$
\begin{array}{c}
\text{DegP} \\
\langle k, \langle o, t \rangle \rangle \\
\lambda k \lambda o \,.\, {}^{\cup}k(o) \\
| \\
tak
\end{array}
\qquad k
\qquad
\begin{array}{c}
| \\
pies
\end{array}
$$

Adverbial:

$[\![[_{VP} \; Floyd \; mówił/'spoke']]\!] = \lambda e \,.\, \mathbf{spoke}(e, \mathbf{Floyd})$

$[\![[_{VP} \; Floyd \; mówił/'spoke'] \; [tak \; k]]\!] = \lambda e \,.\, \mathbf{spoke}(e, \mathbf{Floyd}) \wedge {}^{\cup}k(e)$

What can be a manner?

▸ Not all adverbials accessible: no temporal or locative adverbials, generally.

(24) a. *Maria hat am Dienstag getanzt und Jan   hat
        Mary has on Tuesday danced and John has
        auch so   getanzt.
        also thus danced
        'Mary danced on Tuesday, and John danced like that too.'

(25) a. *Maria hat in Minnesota gegessen und Jan hat
        Mary has in Minnesota eaten   and John has
        auch so   gegessen.
        also thus eaten
        'Mary ate in Minnesota, and John ate like that too.'

▸ Except when the locative can be construed as specifying a kind of event.

(28) Maria schläft in einem Schlafsack   und Jan schläft auch so.
     Maria sleeps in a   sleeping-bag and Jan sleeps also thus
     'Maria sleeps in a sleeping bag, and Jan sleeps like that too.'

Locatives may relate to the event frame in different ways; one construal is a manner-like meaning (more later).

What can be a manner?

▸ Anderson & Morzycki formalization allows kinds to be constructed on the fly.

▸ But, not all properties of events (for instance) make good manners or degrees.

▸ Rett (2011): Only a manner reading with similatives (adverbial *as* phrases).

(42) a. Floyd ran $\begin{Bmatrix} \text{six miles} \\ \text{for two hours} \end{Bmatrix}$, and Clyde ran as Floyd did.

  b. Floyd cooled his coffee 5 degrees, and Clyde cooled his coffee as Floyd did.

▸ Can see the same problem with manner anaphora like *like that*.

  (a) ??Floyd cooled his coffee 5 degrees, and Clyde cooled his soup like that.

▸ **Diagnosis**: no event-kinds like RUN-SIX-MILES or COOL-BY-5-DEGREES.

▸ Events do not permit manners based on the kind of ordering found with degrees.

Distinguished properties

‣ Anderson & Morzycki (2015) introduce a notion called "distinguished property."

‣ **Intuition**: event-kinds are only formed from certain event properties, the "distinguished properties" of the event.

‣ Degrees such as *by five degrees* or *six miles* are not among the distinguished properties of an event.

‣ Distinguished properties are a way of making reference to what the "core" properties of an event are.

> Nevertheless, it seems reasonable to suppose that a core part of what it is to be an event is to be realized in a certain manner. To be sure, for some events, we care a great deal about their temporal extent, and for others, about their spacial extent. **But for virtually any event, we care about how it took place.** We don't talk about events chiefly to measure them. We talk about them chiefly to characterize or explain them.
>
> (Anderson & Morzycki 2015: 811)

Next step

• Frame semantics is in a good position to give an answer to the question of what distinguishes "distinguished properties".

— a qualitative perspective, including decomposition of the verb meaning.

• There are different types of event-related modifiers; comparing them can give us a clue as to what is special about manner.

Which VP-modifiers are **not** manner modifiers?

• Manner modification is commonly distinguished from other types of "event predication", even other types of "event-internal modification".

a) "Event-external" modifiers:

• Localisation of events: time, place, ordering ...

• Predicative modifiers (depictives)

b) Other "event-internal" modifiers:

• Resultative modifiers ?

• Circumstantials

• Some "event-internal locatives"

• Method and domain

• Mental-attitude (*intentionally*)

• Modifiers targetting simple implicit arguments: *teuer verkaufen*

Which VP-modifiers are **not** manner modifiers?

1. Joining independent situations without effects of concept combination.

- **"Circumstantial adjuncts"**

Ist der Erpel geneigt, diesen Antrag anzunehmen, so hebt er das Kinn und sagt, <u>indem</u> er den Kopf etwas von der Ente wegwendet, sehr schnell "räbräb, räbräb!"

'If the drake is inclined to accept the proposal, he lifts his chin and says, INDEM he turns his head slightly away from the duck, very quickly ["rabrab, rabrab!"].' (from Bücking 2014)

"indem" introduces a separate event

- **Depictives**

The children returned home dirty but happy

"dirty" introduces a separate state that has held before / independently of the event

Which modifiers are **not** manner modifiers?

2. Reference to isolated attributes or implicit arguments

Sie haben das Öl   teuer   verkauft.

they have   the petrol expensive sold

depictive or adverbial?

• *sell at high prices* is not a depictive reading

Sie haben Öl billig einlagern können.

?1. They were able to stock petrol while it was cheap

2. They were able to store the petrol at low cost.

1. = depictive?

? ...*und wir haben es auch **so** eingelagert.*

2. reference to a PRICE attribute of the event — still not "manner"?

Which modifiers are **not** manner modifiers?

• **Temporal modifiers** — even though they involve functional attributes

(i) *We played$_e$ Bridge <u>yesterday</u>.*   TIME(e) = t   & t ⊂ **yesterday**

• **Locative modifiers:**

Analogous. But apart from locatives that localise the whole event, there are "event-internal locatives" (Maienborn 2003).

(ii) *He sat (in the corner) <u>on a chair.</u>*   **? where / * how**

(iii) *The robbers escaped <u>on their bicycles.</u>*   **how / * where**

(iv) *Sign the treaty <u>on the last page.</u>*   **where / *how**

(v) *She prepared the chicken <u>in a marihuana sauce.</u>*   **how / *where**

How-questions occur if the reference object is not separable from the event description but interacts with it.

Which modifiers are **not** manner modifiers?

He played$_e$ the ace <u>first.</u> $FIRST(STAGE.STRUCT(e_B)) = e$
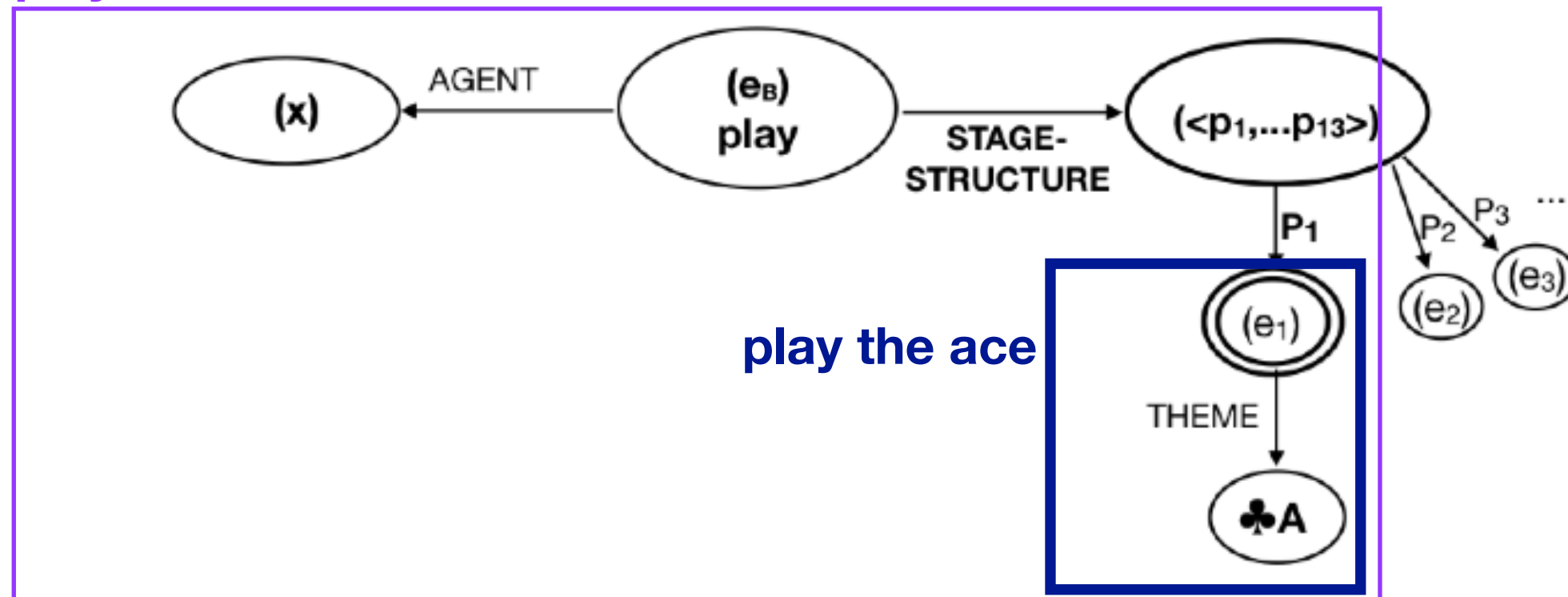
play the ace first

Fig. 7a: Partial frame of "playing the ace of clubs first" in a game of cards
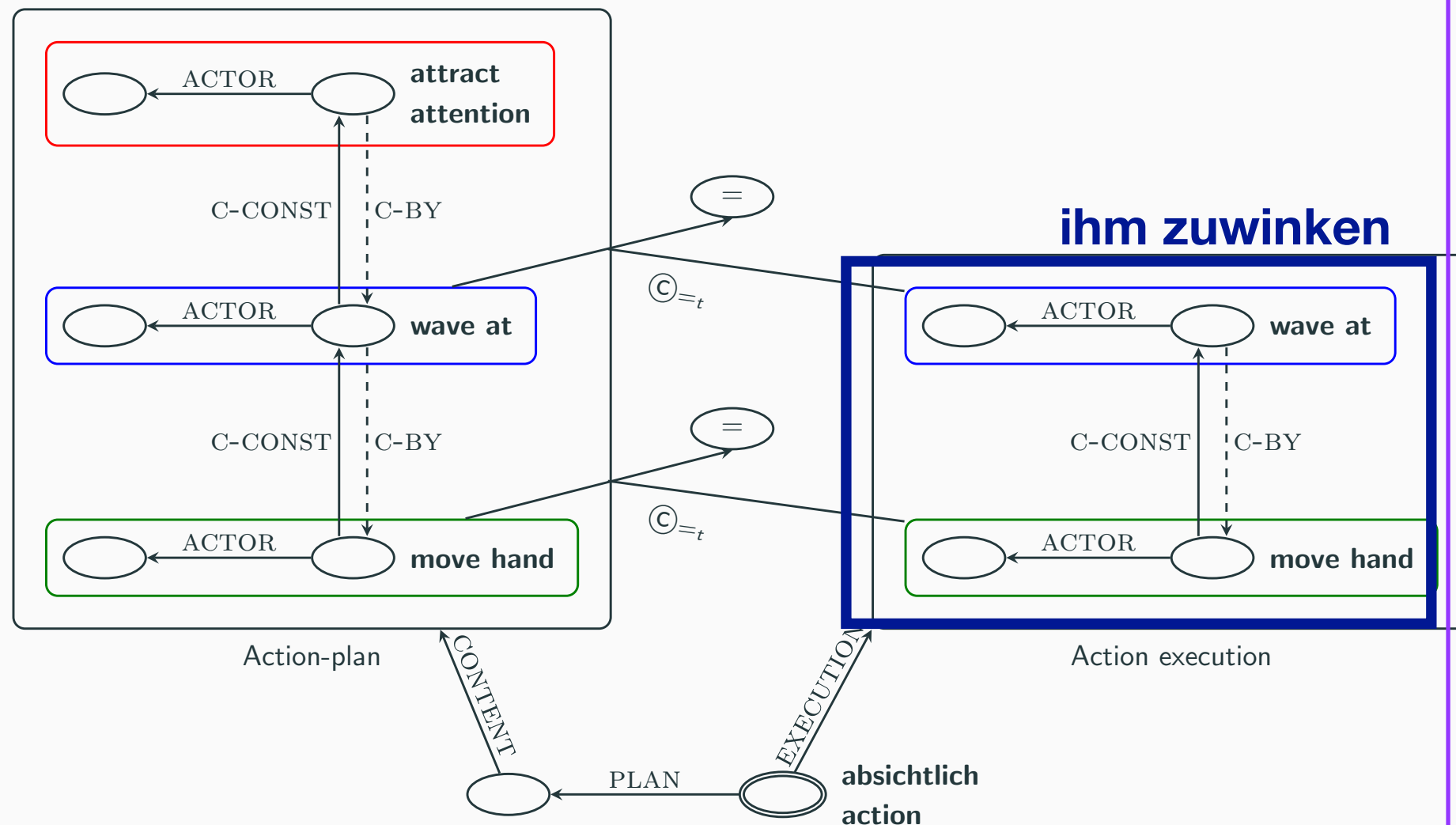
(Geuder subm 2018)

Which modifiers are **not** manner modifiers?

5. Adverbs of intentionality

Ich habe ihm absichtlich zugewunken.

'I waved at him intentionally.'

ihm absichtlich zuwinken

ihm zuwinken

Analysis:

Similar as before; the modifier **embeds the action description into a larger one** (a plan).

(Gabrovska & Geuder ms 2018)

Minimal contrasts between manner and intentionality

Acting intentionally vs. acting carefully

(i) *Die Rüben wurden <u>versehentlich</u> mitgewaschen*   *** how**
     the turnips were   by-mistake   washed [together with...]

(ii) *Die Rüben wurden <u>sorgfältig</u> gewaschen*   **√ how**
     the turnips were   carefully   washed

(iii) *? Die Rüben wurden <u>versehentlich sorgfältig</u> gewaschen*

Carefully / sorgfältig entails intention —

but also has manner components, and the manner meaning is what goes beyond the pure statement of intentionality.

Minimal contrasts between manner and intentionality

Usually, *carefully / sorgfältig* entails intention. But it also has manner components, and the manner meaning is what goes beyond the pure statement of intentionality.

- ***Carefully*-type modifiers invoke a method of an action:**

(Gabrovska in prep)

Die Rüben werden <u>sorgfältig</u> gereinigt, <u>indem</u> man sie einige Minuten lang im Wasser lässt, dann wäscht und abbürstet.

"The turnips are <u>carefully</u> cleaned, <u>by</u> leaving them in the water for a few minutes, and then washing and brushing them."

Die Rüben werden <u>sorgfältig</u> gereinigt,?? <u>indem</u> man sie nur mal kurz unters Wasser hält. "... <u>by</u> holding them under the tap just a little bit."
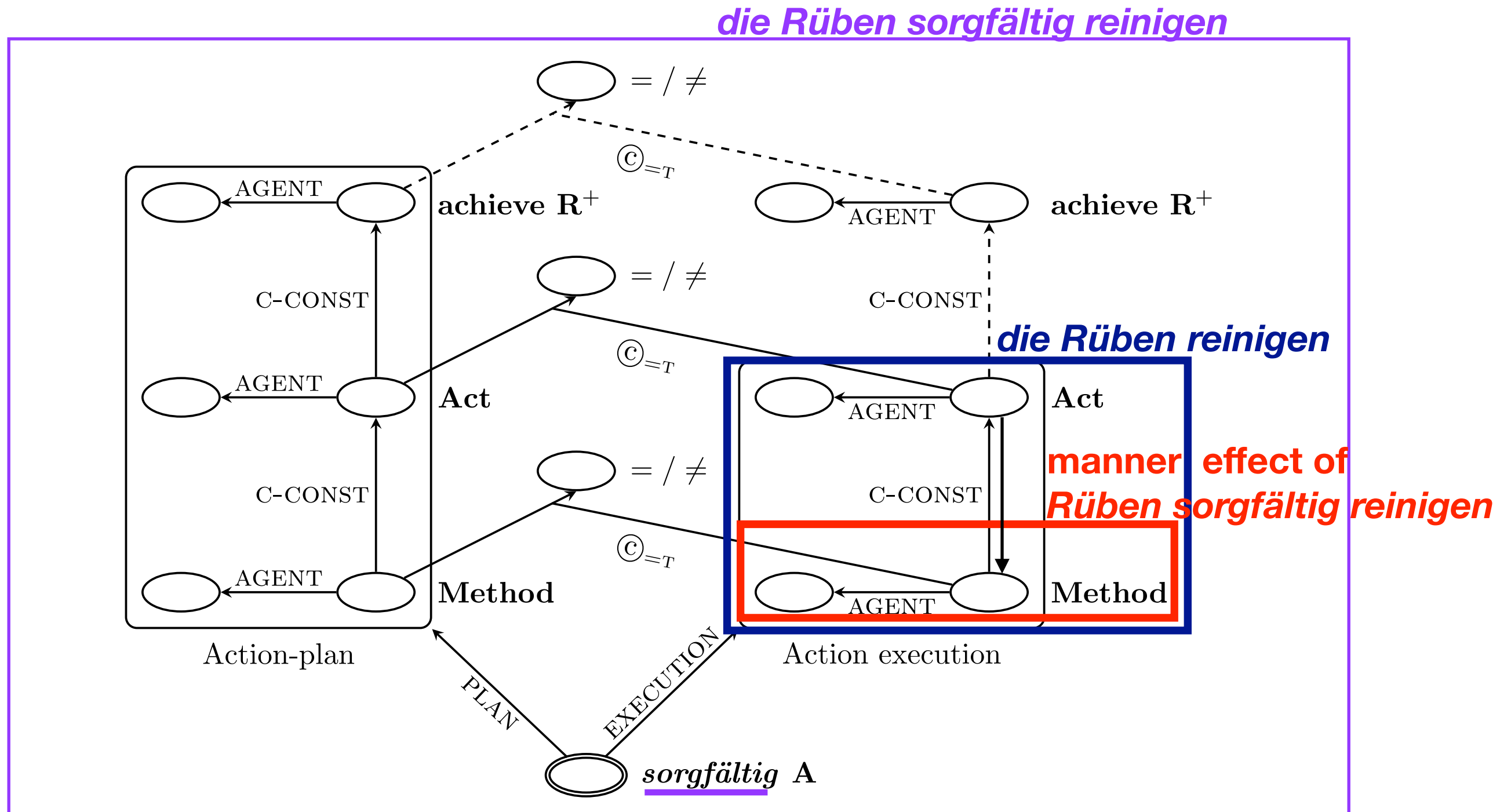
Sorgfältig as an intentional+manner modifier

Figure 1: Cascade representation of *sorgfältig* A (from Gabrovska in prep)

Which modifiers *are* manner modifiers?

Result so far:

Manner modifiers typically
– interact with certain "core" attributes of an event description (not localising or plan attributes)
– interact with a network of attributes that are interconnected by correlations (not isolated attributes or implicit arguments).

Moreover:
• Manner modifiers typically appear not so much as attributes added to a frame, but as operators over a network of attributes and their value space. Specifically:

— Abstract manner modifiers require implementations.

— Manner modifiers trigger patterns of correlations among attributes.

The behaviour of *carefully* is part of a larger picture

A large class of modifiers has an abstract meaning that calls for a concrete implementation:

The city council generously $_P$[contributed 2000 € $_F$]
The city council contributed generously (i.e. by giving 2000€)$_{=P}$

He rudely $_P$[left without$_F$ good-bye].
He left rudely (i.e., without good-bye)$_{=P}$

He stupidly $_P$[played his ace first$_F$].
He played stupidly (i.e., by playing his ace first)$_{=P}$

White illegally $_P$[moved a pawn diagonally$_F$]
White moved illegally (i.e. moved the pawn diagonally)$_{=P}$

Commonality:
The manner interpretation relies on a **correlation** between the adjective's P-argument (the adverb's scope) and **values of some event attribute(s).**
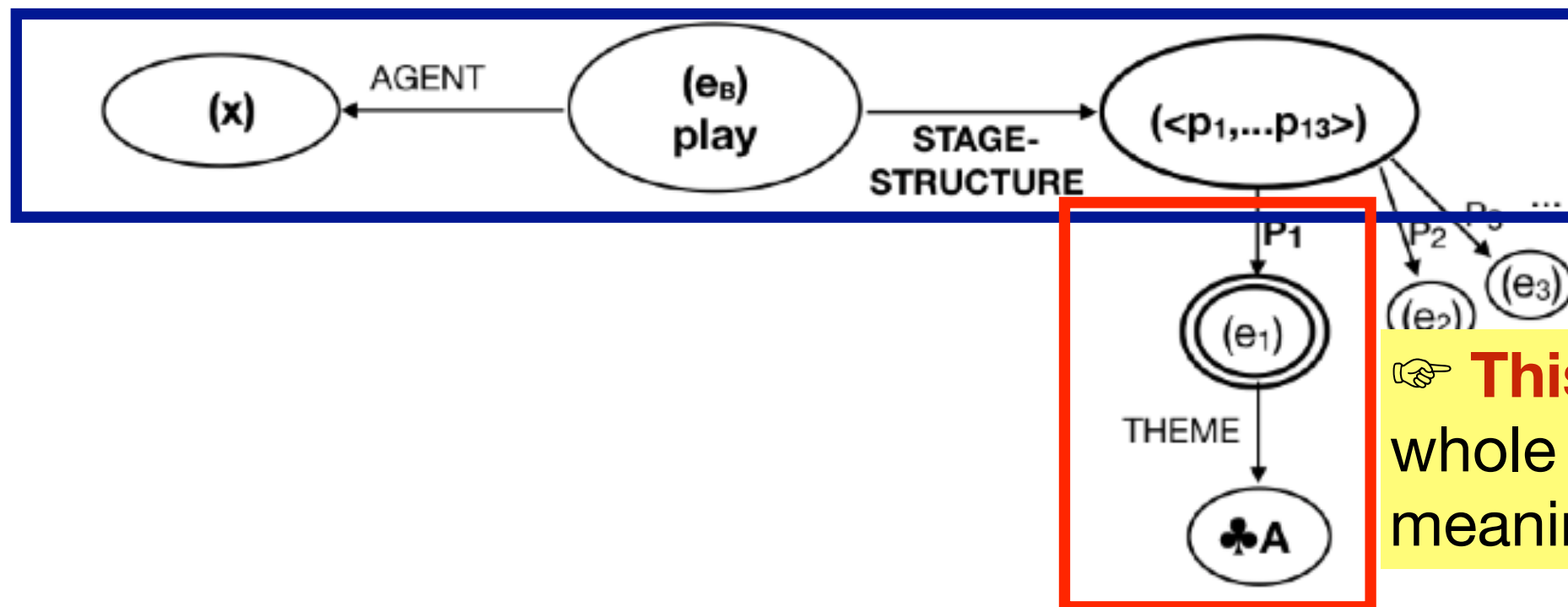
(Geuder subm 2018)

Manner modifiers operate on an attribute structure

(i) *He played <u>stupidly</u>:*

   ... playing his ace first, and then losing his queen to the king, ...

play stupidly

play (cards)

AGENT

(x)

(e_B) play

STAGE-STRUCTURE

$(<p_1,...p_{13}>)$

P_1

P_2

P_3 ...

(e_1)

(e_2)

(e_3)

THEME

♣A

☞ **This** is not the whole manner meaning

accommodation$_c$ triggered by "stupidly"
(because e1 has undesirable consequences etc.) ☞ further frame specifications

What is manner

Manner modification in a Frame model:

• Manner modifiers impose a partition on the value space of an event frame, making the frame more specific).
• They effectively act as subsective operators that turn an event property into a more specific one, a subtype.

Consequences:

• Property values, attributes, methods or events themselves are not "manners".

• Modifiers take a global effect on a whole network of interrelated attributes.

• Modifier meanings may constrain manner in an indirect way, i.e. the actual effect on the frame may consist in implicit changes.

What is manner

Manner modification maps an event property onto a subtype.

- Consequence:

Property values, attributes, or events themselves are not the "manners".

(i) *Between Cologne and Frankfurt, the ICE runs at 300 km/h.*

- The entity *"300 km/h"* is not a manner of running.
- Is the SPEED attribute itself a manner?

(ii) *Er verkauft die Rüben sehr billig.*

  he sells the turnips very cheap

- The PRICE attribute of *sell* is not a manner of selling.
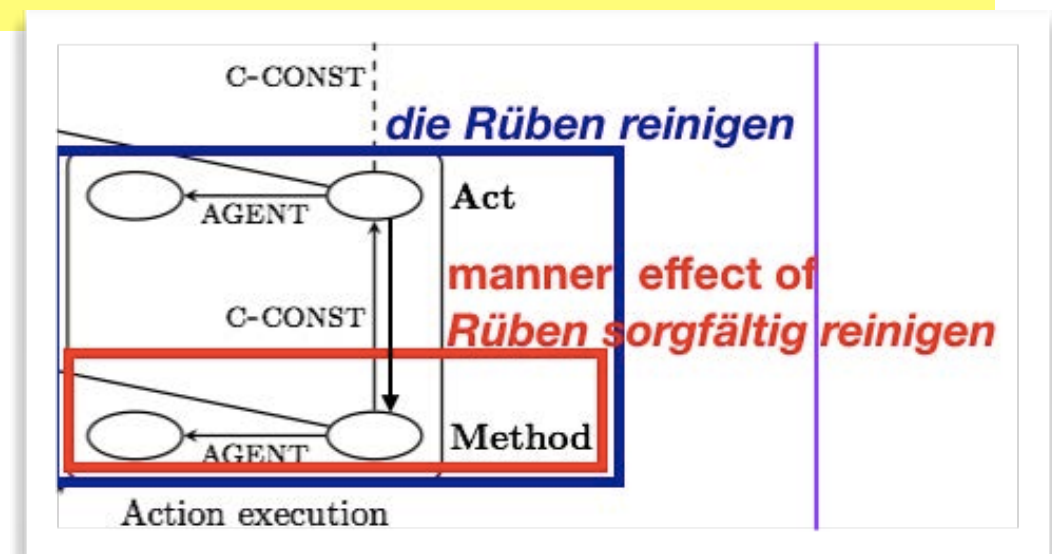
What is manner: "methods"

(iii) *Die Rüben werden* <u>*sorgfältig*</u> *gereinigt,* <u>*indem*</u> *man sie einige Minuten lang im Wasser lässt, dann wäscht und abbürstet.*

"The turnips are <u>carefully</u> cleaned, <u>by</u> leaving them in the water for a few minutes, and then washing and brushing them."

• The event *bürsten* (to brush) is not a manner — it is a **method** that implements$_c$ the event type *reinigen* (to clean).
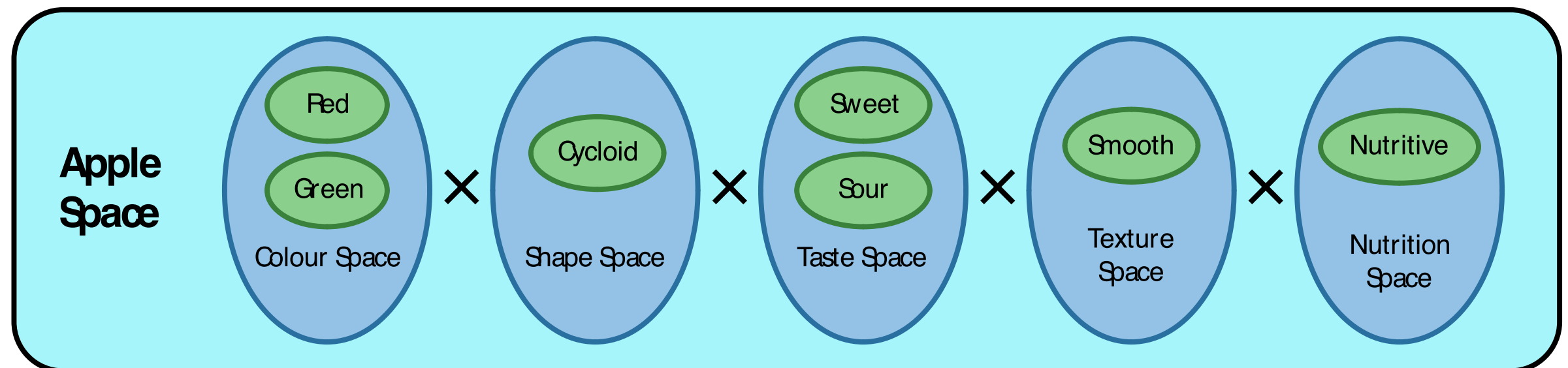
Manner modifiers operate on a whole feature space, potentially also including "methods".

• Jaworski's joke works because the contents of the restriction on methods must be inferred from contextual knowledge, not because "manner" and "method" are ontologically distinct.

What is manner?

- The "feature space" metaphor is of course from Gärdenfors (2000, 2014)...

ellipsoids). This diagram is inspired on the intuitive notion that a concept in conceptual spaces can be seen a product of regions (or subspaces) in a series of quality domains (Figure 1a); or as a region in a

(from Fiorini, Gärdenfors & Abel 2014)

- The feature space of a frame is more involved, due to the recursive embedding of attributes.
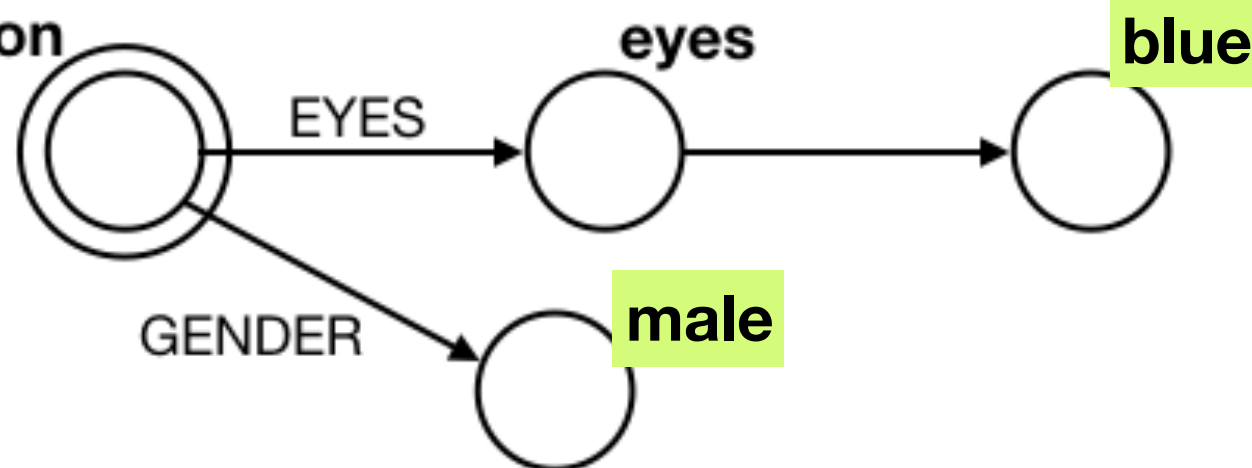
Manner in Frames

Modifiers impose a partition on the value space of an event frame.

• Technically, restricting the values in some attribute leads to a type restriction of the central node (mirroring the product space of all changes).

• Still, this must be those "distinguished" attributes that underlie the categorisation of events itself, i.e. context-independent properties.
• Note that manner modifiers are operators that **require** a change in the attribute structure

What is manner

There is a difference between inferring a specification to a frame, and resolving manner modifcation (via inference).

• Locatives or depictives may give rise to inferences about subtypes, but have a meaning independent of that

    Sie läuft auf dem Eis   →*inference:* add   GAIT(e)) = **...**

    Er fährt betrunken Rad   →*inference:* add   SHAPE(PATH(e)) = **wiggly**

• In contrast, manner modifiers (e.g. also *so)* require solving an equation for particular values:

Sie läuft (so) **wie** *auf Eis*

Er fährt (so) / **wie wenn** *er betrunken wäre*   *(driving as if he were drunk)*

= The subtype that arises from constraining *fahren* by the correlates of *betrunken*

To iterate: the "subsective" analysis

Manner modification in a Frame model:

• Manner modifiers impose a partition on the value space of an event frame, making the frame more specific).

• They effectively act as subsective operators that map an event property onto a more specific one, a subtype.

EXPLICITLY REFERENCING MANNERS

Next step

Assuming an interpretation of manner modification as the creation of a subtype, how does it relate to observations on explicit reference to manners?

The referential problem of manners

- Frame semantics seems to be equipped for describing the conceptual properties of manner modification.

- The subtyping approach predicts subsectivity of manner modifiers and the existence of similar effects with adnominal modifiers

- However, referential properties of manner modification generate puzzles for a frame account.

- Three challenges for a theory of manner modification in frames.

    1. What are manner anaphors anaphoric to?

    2. Manner nominalization in frames

    3. Manners are definite

The non-portability of manners

▸ Manners themselves also cannot be transferred across events, as diagnosed via anaphora (*Like that* is argued to be a manner anaphor. See Landman 2006 and Anderson 2010.)

(a) Curt danced **elegantly**, and Willi elegantly jumped the fence.
(b) *Curt danced **elegantly**$_1$, and Willi jumped the fence **like that**$_1$
(c) *Curt ran a race **quickly**$_1$, and Willi wrote a paper **like that**$_1$
(d) Curt danced **elegantly**$_1$, and Willi danced **like that**$_1$ (, too)

▸ Same manner adverb in both conjuncts, but manner anaphor *like that* not able to be integrated with VP in (b) and (c).

▸ **Conclusion**: the particular way a manner manifests is dependent on event.

Subsectivity of manners

‣ Lack of intersectivity suggests no property of being *clumsy*!

‣ Manners are not intersective properties of events. Rather, more like subsective adnominal modifiers like *skillful* and *good*.

　　[[good friend]] ⊆ [[friend]]
　　[[skillful surgeon]] ⊆ [[surgeon]]

‣ Might suggest that the relationship between a manner and an event frame is more complex than simply the specification of the type of one value.

Not only the verbal domain

‣ This problem is not only present with adverbs.

‣ Some but not all attributive adjectives can be anaphorically accessed.

   Your city has a greedy/former mayor, and we have one like that too. (=greedy)

‣ Need a notion of distinguished properties for *like that* as an adjectival anaphor, in order to rule out *former* as an antecedent.

Puzzle 1: What are manner anaphors anaphoric to?

▸ Landman & Morzycki, Anderson & Morzycki: manner anaphors are anaphoric to an event-kind.

▸ Contextually relevant event-kinds (manners) provide discourse referents.

▸ In a frame: DRs can be thought of as a subset of the values in a frame.

▸ Suggests that a manner should be a value in a frame, since manners are accessible as DRs under at least some circumstances.

Puzzle 2: Manner nominalizations in frames

- Deverbal nominals that are interpreted as manner nominals exist in some languages.

  - Turkish: morphologically marked with suffix *-(y)iş* (Comrie & Thompson 2007)

    (20) a. yürü-   —> yürüyüş

          to walk   way of walking

          b. ye-   —> yeyiş

          eat   way of eating

          c. yap-ıl-   —> yapılış

          make-PASS   way of being made

    German uses compounds:

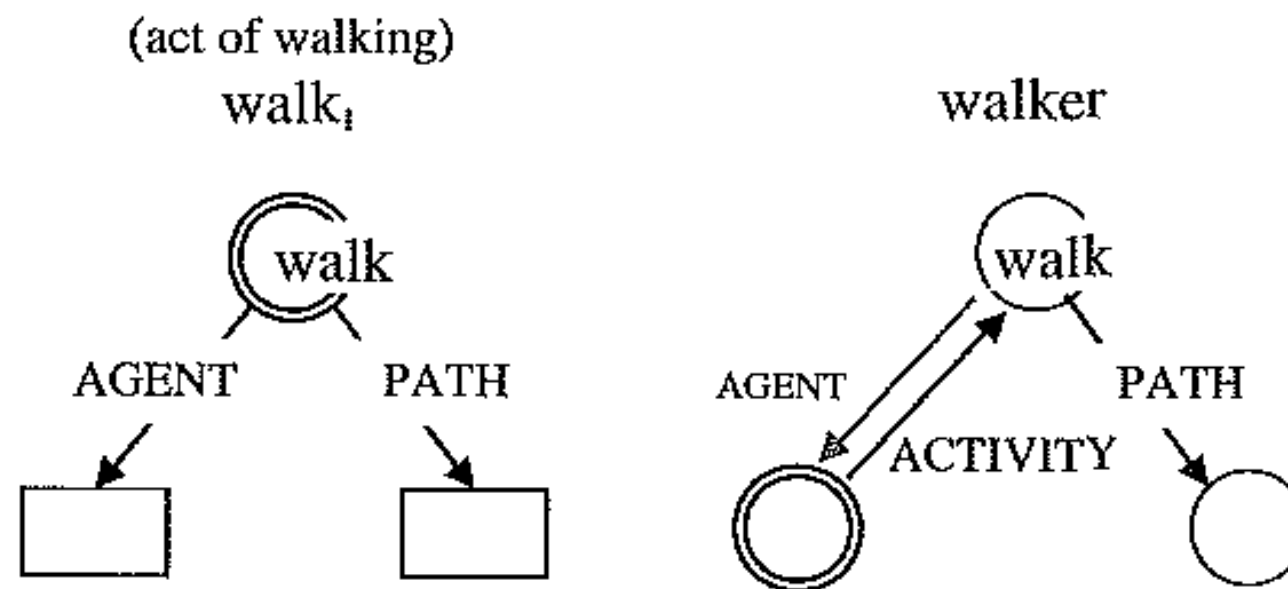   G. *Gangart* (walk-kind = gait)

    G. *Essweise* (eat-way),
    e.g. *sich diese hastige Essweise abgewöhnen*
    "get out of that habit of eating hastily"

    G. *Machart* (make-kind = workmanship)

- Supyire *jyiile* 'cross (a river)', *jyiile-ŋka-* 'manner of crossing' (Carlson 1994, as cited by Aikhenvald 2011)

- Amharic *sbr* 'break', *assababar* 'manner of breaking' (Amberber 1996, as cited by Aikhenvald 2011)

Puzzle 2: Manner nominalizations in frames

▸ Usual mode of analysis of nominalization within frames: referential shift. (See Löbner 2013, Kawaletz & Plag 2015, Kawaletz et al. 2018.)

▸ Example: *-Er* nominalization *walker* can be analyzed as a shift to the AGENT node of a *walk* event frame.

▸ If MANNER isn't an attribute of an event frame, then what node(s) does a manner nominalization shift to?

Puzzle 3: Manners are functional concepts

‣ Manners can be paraphrased with definite descriptions using *way* and *manner*.
  (a) The way Curt tripped was clumsy.
  (b) The manner in which Willi signed his name was quick.

‣ Must be paraphrased with definite determiner:
  (c) the/*a way in which Willi signed his name was hasty

‣ Frame attributes also have a similar linguistic reflex, where they are expressed via definite descriptions, due to uniqueness.
  (d) the/*a height of the building
  (e) the/*a time when humans first walked on the Moon

‣ **Challenge**: MANNER looks like a functional concept, but what is the codomain of the function?

So what is manner

We can distinguish "m-theories" and "k-theories" of manner:
— Are manners primitive entities / particulars that live *in* a frame, or
— Are manners subtypes derived from a given event type? [the "subsective" / kind-analysis].

We see better prospects for a theory of manner in the "subtype" approach:

— a manageable ontology

— manner as the sum effect of changes in attributes/values

— the dependency of manners on events

Frame theory provides an understanding of manner that goes beyond the introduction of new variables...

APPENDIX

Umbach & Gust's (2014) similarity spaces

▸ Umbach & Gust (2014): German *so* regards not kinds, but similarity.

▸ Similarity is with respect to a dimension.

▸ Adjectives and nouns are associated with measure functions.

▸ Measure function for a noun like *car* is multidimensional. Essentially a feature structure.

(27)   One-dimensional measure function associated with *tall*:

$\mu_{height}: U \rightarrow \mathfrak{R}$

(28)   Many-dimensional measure function associated with *car*:

DRIVE_TYPE:	$U \rightarrow$ {diesel, gasoline, natural gas, electric}
NUMBER OF DOORS:	$U \rightarrow$ {1 …5}
EQUIPMENT:	$U \rightarrow \wp${rear assistance, lane guide, park pilot, BLIS}
HORSEPOWER:	$U \rightarrow \mathfrak{R}^+$
ELECTRONIC IMMOBILIZER:	$U \rightarrow$ {0, 1}

Criterial dimensions

- U&G also need a notion of which dimensions are available for reference via similarity demonstratives.

(22) A: Ich will in den Ferien über Land fahren und an die alten Zeiten denken und dabei meine ganzen alten Kassetten hören. Es gibt aber ein Problem: Mein Auto hat nur einen CD-Spieler. Wer kann mir helfen?
'I'm planning a retro road trip, complete with my collection of 8-track tapes. Only one problem: this car only has a CD player. Who can help me out?'

  B: Ich leider nicht. Ich hab auch so ein Auto.
'Not me; I have such a car, too.'

(23) A: Guck mal, das Auto da drüben hat einen Strafzettel.
'Look, the car over there has a parking ticket.'

  B: ??? Auf der anderen Straßenseite steht auch so ein Auto.
'Such a car is on the other side of the street, too.'

- Call these dimensions "criterial dimensions"

Criterial dimensions and *k*-properties

▸ U&G adopt a distinction made by Prasada & Dillingham (2006).

  ▸ *k*-properties: properties humans ascribe to entities because they are the kind of things they are

  ▸ *t*-properties: factual and statistical properties

(24)   a.   Dogs are four-legged.
           b.   Dogs, in general, are four-legged.
           c.   Dogs, by virtue of being the kinds of things they are, are four-legged.

(25)   a.   Barns are red.
           b.   Barns, in general, are red.
           c.   # Barns, by virtue of being the kinds of things they are, are red.

▸ Similarity demonstratives are sensitive to *k*-properties, but not *t*-properties.

APP 2

More than one manner

Sæbø (2016): **How-questions for manners** do not define a complete answer:

How was she dressed?   — In blue. / Like you, kind of. / Conservatively, but not to an extreme. / A fur coat of some kind; no hat. …

(Or: *How did he sing the aria? — Emphatically, loudly, in falsetto, in Italian, omitting the da capo)*

 # But:
• The noun "manner" usually occurs as a singular (often definite).
• "*The manner/way in which she was dressed astonished me*" does not refer to one particular attribute.

• Manners are difficult to count:

On this CD, they perform "La Follia" in 20 different ways / manners.

(implies as many performances)

What is manner

 # Hypothesis:
• *How*-questions can be answered by offering relevant descriptions. But a (piece of a) description of an event is not a manner of an event. Rather, "manner" is about the subtyping relation holding between an event type and a more specific derived type. (And descriptions combine to specify a manner.)

Therefore:
I saw how she wrote, namely elegantly and effortlessly.
"Manners can be directly perceived" (Piñón 2007) because events can be.

There is no "manner attribute"

A. "The manner of the event" as a functional attribute

• Piñón (2007)

(12)   a. $\lambda E \lambda e.\textbf{form}(E)(e)$ ▷ Function from event types and events to form-manners
       b. $\lambda e.\textbf{form}(\lambda e'.\textbf{write}(e'))(e)$
                        ▷ Function from events to form-manners for the writing event type

    Since manners, as concrete particulars, are intimately tied to the particular events that they are manners of, no two writing events can have the same form-manner:

(15) $\forall e \forall e'(\exists m(\textbf{form}(\lambda e''.\textbf{write}(e''))(e) = m \land \textbf{form}(\lambda e''.\textbf{write}(e''))(e') = m) \rightarrow$ ▷ Axiom
       $e = e')$

i.e. individual manners depend on individual events

(18)   1: $[_{\text{VP}}\ \text{write-}] \rightsquigarrow \lambda e.\textbf{write}(e)$
       2: illegibly $\rightsquigarrow \lambda E \lambda e.E(e) \land \textbf{illegible}(\textbf{form}(E)(e))$
       3: $[_{\text{VP}}\ [_{\text{VP}}\ \text{write-}]\ \text{illegibly}] \rightsquigarrow \lambda e.\textbf{write}(e) \land \textbf{illegible}(\textbf{form}(\lambda e'.\textbf{write}(e'))(e))$

There is no "manner attribute"

A. "The manner of the event" as a functional attribute

• Piñón (2007)

(12) a. $\lambda E \lambda e.\mathbf{form}(E)(e)$ ▷ Function from event types and events to form-manners

  b. $\lambda e.\mathbf{form}(\lambda e'.\mathbf{write}(e'))(e)$

  ▷ Function from events to form-manners for the writing event type

A simple example with *painstakingly* is analyzed as follows:

(22) Rebecca write- painstakingly $\rightsquigarrow$

  $\lambda e.\mathbf{agent}(\mathbf{rebecca})(e) \wedge \mathbf{write}(e) \wedge \mathbf{painstaking}(\mathbf{effort}(\lambda e'.\mathbf{write}(e'))(e))$

(23) Rebecca painstakingly write- illegibly $\rightsquigarrow$ m1   ▷ Cf. (3a)

  $\lambda e.\mathbf{agent}(\mathbf{rebecca})(e) \wedge \mathbf{write}(e) \wedge \mathbf{illegible}(\mathbf{form}(\lambda e'.\mathbf{write}(e'))(e)) \wedge$

  $\mathbf{painstaking}(\mathbf{effort}(\lambda e'.\mathbf{write}(e') \wedge \mathbf{illegible}(\mathbf{form}(\lambda e''.\mathbf{write}(e''))(e')))(e))$

  m2

dtto.: *slowly(*RATE*(e)) and carefully(*EFF*(e))*

What is manner

Schäfer (2013: 51–58, esp. p.55) contrasts "one-dimensional" and "multi-dimensional" modifiers, noting a correlation that it is only the latter ones that really allow the paraphrase "in an *A* manner".

In contrast, relative / demonstrative pronouns (*wie / so)* do not reflect such a distinction.

(17)   a.   *Kord ist **schnell/langsam** gelaufen.*
Kord is quick/slow   ran
'Kord ran quickly/slowly.'

        b.   ?*Kord ist auf schnelle Art und Weise gelaufen.*
Kord is on quick   manner   ran
'Kord ran in a quick manner.'

        c.   *Wie Kord gelaufen ist, das war schnell/langsam.*
how Kord run   is, that was quick/slow
'The way in which Kord ran was quick/slow.'

As the comparison between examples (16b) and (16c) and (17b) and (17c) shows, both *laut/leise* 'loudly/quietly' and *schnell/langsam* 'quickly/slowly' sound strange with the *in-ADJ-manner*-paraphrase, while the *Wie-das-ist*-paraphrase is unproblematic. An attractive explanation for this lies in the one-dimensionality of these adjectives: *laut/leise* 'loud/quiet' specify only the sound volume, *schnell/langsam* 'fast/slow' specify only the speed, whereas

What is manner — Jaworski's joke

(1) – Headquarters, there's a high yield explosive timed to detonate in four minutes!
      How do we disarm it?
      – Very carefully!   [Jaworski 2009, p. 134]

• On our analysis (above), *carefully* is an abstract predicate that relies on contextual knowledge for deriving a suitable method, which then constrains the information in the frame, creating a subtype of the previous frame.

• "The method" *is* not "the manner", nor is it a different thing; but: constraining the frame to a subframe is manner modification (no matter whether what the value sets at issue are composed of).

• The joke lies in the fact that a context-dependend underspecified manner modifier is used in a situation in which people are lacking exactly the relevant piece of contextual knowledge.

Minimal contrasts between manner and intentionality (II)

• **Mental states** can function like manner modifiers, as opposed to a function as "mental-attitude" adverbials (cf. Buscher 2016):

"*In der Schwangerschaft habe ich das erste mal* bewusst ~~"consciously"~~ **= ?**
Sauerkraut gegessen und konnte nicht mehr aufhören."

(i) *da habe ich zum ersten mal Sauerkraut [bewusst]$_F$ gegessen*   **(i) how**
          for the first time sauerkraut with.full.awareness eaten

(ii) *da habe ich zum ersten mal bewusst [Sauerkraut]$_F$ gegessen*   **(ii)   * how**
       for the first time *deliberately*   sauerkraut   eaten   **(≈ how come)**

The use in (ii) is about conscious choice = a plan attribute.
A type of adverbial different from manner.