What is manner modification?

B09 & C10
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SFB-colloquium 13 Dec 2018
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?

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:
\[ \lambda Q \lambda P \lambda x [P(x) \land \exists m [ \text{MANNER}(x,m) \land Q(m)]] \]

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

(12) a. \[ \lambda E \lambda e. \text{form}(E)(e) \] \(\triangleright\) Function from event types and events to form-manners
b. \[ \lambda e. \text{form}(\lambda e'. \text{write}(e'))(e) \] \(\triangleright\) 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.’
Manner anaphora:

- **a.** On tańczył tak.
  - he danced thus
  - ‘He danced like that.’

- **b.** On tantseval tak.
  - he danced thus
  - ‘He danced like that.’

- **c.** Er hat so getanzt.
  - 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.
Parallelism extends to as phrases as well.

(5) Taki pies jak ten uciekł wczoraj w nocy. (Polish)
   ‘Such a dog as this ran away yesterday in night’

(6) So ein Hund wie dieser hat mal meinen Bruder gebissen. (German)
   ‘Such a dog like that once bite my brother.’

(7) Jan tańczył tak jak Maria. (Polish)
   ‘John danced this way/the way Mary did.’

(8) Jan hat so wie Maria getanzt. (German)
   ‘John has thus as Mary danced’
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) \[
  [[\text{such}_i]] = \lambda x . \ x \text{ realizes } k_i
  \]

  (23) \[
  [[\text{tańczył}]] = \lambda e . \ e \text{ is a dancing}
  \]
  
  \[
  [[\text{tak}_i]] = \lambda e . \ e \text{ realizes } k_i
  \]
  
  \[
  [[\text{tańczył} \ \text{tak}_i]] = \lambda e . \ e \text{ is a dancing} \land e \text{ realizes } k_i
  \]
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

#### KIND:
- tak **pies**
  such-MASC dog
  ‘such a dog’, ‘a dog of that kind’

#### MANNER:
- tak **się** zachowywać
  such REFL behave
  ‘behave that way’

#### DEGREE:
- tak **wysoki**
  such tall
  ‘that tall’

### German

#### KIND:
- so **einen Hund**
  such a dog
  ‘a dog of the same kind’

#### MANNER:
- so **getanzt**
  such danced
  ‘danced like that’

#### DEGREE:
- Ich bin **so** groß
  I am such tall
  ‘I am this tall.’

---

**Note:**

1. Jak also has other uses. Citko (2000) points out that in embedded contexts it has a use as a temporal adverbial and as the antecedent of a conditional, though she argues that these involve a different form of the word that is a wh-complementizer rather than the phrasal wh-expression that gives rise to the readings in (2).
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.

\[ \cup \text{operator represents the realization relation:} \]
- If Bugs Bunny is a rabbit, then \[ \cup \text{RABBIT}(\text{Bugs Bunny}) \]

- In other words, \[ \cup \text{RABBIT} = \text{rabbit} \]
Such/so/tak can get an interpretation similar to that of Landman & Morzycki (2003).

\[(38) \quad \lbrack \text{tak}\rbrack = \lambda k \lambda o . \bigcup k(o)\]

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

\[
\begin{align*}
\text{Adnominal:} & \quad \text{NP} \\
& \quad \langle e, t \rangle \\
& \quad \lambda x . \bigcup k(x) \land \text{dog}(x) \\
& \quad \langle o, t \rangle \\
& \quad \lambda o . \bigcup k(o) \\
& \quad \text{DegP} \\
& \quad \langle k, \langle o, t \rangle \rangle \\
& \quad \lambda k \lambda o . \bigcup k(o) \\
& \quad \text{tak}
\end{align*}
\]

\[
\begin{align*}
\text{Adverbial:} & \quad \text{NP} \\
& \quad \langle e, t \rangle \\
& \quad \lambda x . \text{dog}(x) \\
& \quad \langle e, t \rangle \\
& \quad \lambda o . \bigcup k(o) \\
& \quad \text{DegP} \\
& \quad \langle k, \langle o, t \rangle \rangle \\
& \quad \lambda k \lambda o . \bigcup k(o) \\
& \quad \text{tak}
\end{align*}
\]

\[
\begin{align*}
\lbrack [I_{VP} \text{Floyd mówi/‘spoke’}] \rbrack = \lambda e . \text{spoke}(e, \text{Floyd}) \\
\lbrack [I_{VP} \text{Floyd mówi/‘spoke’} [\text{tak} k]] \rbrack = \lambda e . \text{spoke}(e, \text{Floyd}) \land \bigcup k(e)
\end{align*}
\]
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 \{six miles for two hours\}, 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.
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, indem 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.*

**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  
   1. = depictive?  
   2. They were able to store the petrol at low cost.

? ...*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?

3. Localisation

- Temporal modifiers — even though they involve functional attributes
  (i) *We played* Bridge *yesterday.* 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) on a chair.* ? where / * how
  (iii) *The robbers escaped on their bicycles.* how / * where
  (iv) *Sign the treaty on the last page.* where / *how
  (v) *She prepared the chicken in a marihuana sauce.* 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?

4. Localisation in a sequence of events

*He played the ace* first.

\[
\text{FIRST}((\text{STAGE.STRUCT}(e_B))) = e
\]

---

**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.’

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 versehentlich mitgewaschen*
    the turnips were by-mistake washed [together with...]

(ii) *Die Rüben wurden sorgfältig gewaschen*
    the turnips were carefully washed

(iii) ? *Die Rüben wurden versehentlich sorgfältig 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 sorgfältig gereinigt, indem man sie einige Minuten lang im Wasser lässt, dann wäscht und abbürstet.*

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

  *Die Rüben werden sorgfältig gereinigt, indem man sie nur mal kurz unters Wasser hält.*

  "... by 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)
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.

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).
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 \textbf{2000 €}_F] \_P

*The city council contributed* \_P[generously \_P (i.e. by giving \textbf{2000€})=P\_P]*

*He rudely* \_P[ left \_P[without \textbf{good-bye}]] \_P

*He left* \_P[rudely \_P (i.e., without good-bye)=P\_P]*

*He stupidly* \_P[ played his ace \_P[first \textbf{F}]] \_P

*He played* \_P[stupidly \_P (i.e., by playing his ace first)=P\_P]*

*White illegally* \_P[moved a pawn \_P[diagonally \textbf{F}]] \_P

*White moved* \_P[illegally \_P (i.e. moved the pawn diagonally)=P\_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 *stupidly*:
    ... playing his ace first, and then losing his queen to the king, ...

play stupidly

accommodation of triggered by "stupidly"
( because e1 has undesirable consequences etc.)

This is not the whole manner meaning

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

"The turnips are carefully cleaned, by 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 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)...

![Diagram of conceptual spaces for apples]

Figure 1. Example of diagrams depicting the conceptual space of apple: (a) shows the inner form of the apple space as a product of properties (smaller ellipsoids) in different quality domains (bigger ellipsoids); and (b) shows a compact representation of the apple space as a set of points (smaller ellipsoid) in a multidimensional space formed by the product of its quality domains.

4. Representing Parts and Wholes in Conceptual Spaces

The cognitive grounding of the relation existing between parts and wholes must be founded on a broader theory of concepts. Our aim is to show that conceptual spaces can provide the basis for such a theory. In the next sections, we describe how part relations can be founded in conceptual spaces and discuss the consequences for concept representation. The general idea is that the relation between a whole and its parts is represented in a structure space, where structural similarity between wholes can be measured, and prototypical wholes can be identified. We start by exploring the relation between the whole and its structure.

(From Fiorini, Gärdenfors & Abel 2014)

• The feature space of a frame is more involved, due to the recursive embedding of attributes.
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 modification (via inference).

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

\[
\text{Sie läuft auf dem Eis} \quad \rightarrow \text{inference: add GAIT(e)) = ...}
\]

\[
\text{Er fährt betrunken Rad} \quad \rightarrow \text{inference: add SHAPE(PATH(e)) = wiggly}
\]

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

\[
\text{Sie läuft (so) } \mathbf{wie} \text{ auf Eis}
\]

\[
\text{Er fährt (so) } / \mathbf{wie wenn} \text{ er betrunken wäre } \quad (driving as if he were drunk)
\]

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

\[
[[\text{good friend}]] \subseteq [[\text{friend}]] \\
[[\text{skillful surgeon}]] \subseteq [[\text{surgeon}]]
\]

- 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-ıл- —> 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?
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*:

\[ \mu_{\text{height}}: U \rightarrow \mathbb{R} \]

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

- **DRIVE_TYPE**: \( U \rightarrow \{\text{diesel, gasoline, natural gas, electric}\} \)
- **NUMBER OF DOORS**: \( U \rightarrow \{1 \ldots 5\} \)
- **EQUIPMENT**: \( U \rightarrow \varnothing\{\text{rear assistance, lane guide, park pilot, BLIS}\} \)
- **HORSEPOWER**: \( U \rightarrow \mathbb{R}^+ \)
- **ELECTRONIC IMMOBILIZER**: \( U \rightarrow \{0, 1\} \)
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.
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. \( \lambda E \lambda e. \text{form}(E)(e) \) ▷ Function from event types and events to form-manners

   b. \( \lambda e. \text{form}(\lambda e'. \text{write}(e'))(e) \)
      ▷ 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) \( \forall e \forall e' (\exists m (\text{form}(\lambda e''. \text{write}(e''))(e) = m \land \text{form}(\lambda e''. \text{write}(e''))(e') = m) \rightarrow \text{Axiom} e = e' \)

i.e. individual manners depend on individual events

(18) 1: \([_{VP} \text{write-}] \sim \lambda e. \text{write}(e)\)

   2: illegibly \(\sim \lambda E \lambda e. E(e) \land \text{illegible}(\text{form}(E)(e))\)

   3: \([_{VP} [_{VP} \text{write-}] \text{illegibly}] \sim \lambda e. \text{write}(e) \land \text{illegible}(\text{form}(\lambda e'. \text{write}(e'))(e))\)
There is no "manner attribute"

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

- Piñón (2007)

\[ (12) \]
\begin{align*}
\lambda E \lambda e. \text{form}(E)(e) & \quad \text{Function from event types and events to form-manners} \\
\lambda e. \text{form}(\lambda e'. \text{write}(e'))(e) & \quad \text{Function from events to form-manners for the writing event type}
\end{align*}

A simple example with painstakingly is analyzed as follows:

\[ (22) \]
Rebecca write- painstakingly \(\sim\) \\
\[ \lambda e. \text{agent}(rebecca)(e) \land \text{write}(e) \land \text{pastingaking}(\text{effort}(\lambda e'. \text{write}(e'))(e)) \]

\[ (23) \]
Rebecca painstakingly write- illegibly \(\sim\) \\
\[ \lambda e. \text{agent}(rebecca)(e) \land \text{write}(e) \land \text{illegible}(\text{form}(\lambda e'. \text{write}(e'))(e)) \land \text{pastingaking}(\text{effort}(\lambda e'. \text{write}(e') \land \text{illegible}(\text{form}(\lambda e''. \text{write}(e''))(e')))(e)) \]

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.

   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 the one of specification and very much ‘wonderful’ is the
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* Sauerkraut gegessen und konnte nicht mehr aufhören."

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

(ii) *da habe ich zum ersten mal bewusst [Sauerkraut]F gegessen*  
  for the first time *deliberately sauerkraut* eaten

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