Composition, Coercion and the Lexicon:
Deriving Eventive and Stative Readings of Causal Modifiers in Copula Sentences

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German causal *von*-PPs in combination with adjectival copula sentences based on the copula *sein* 'to be' pose two major problems for compositional semantics and ontology. Firstly, causal relations are traditionally taken to hold between events; see, e.g., Dowty (1979), Eckardt (2000), Bierwisch (2002). In (1), e.g., *von* expresses a causal relation between a trip and an event of Paul becoming tired, which is introduced by the change of state copula *werden* 'to become'. However, causal *von*-PPs may also combine with the stative copula *sein* as in (2), and may even lack an internal event argument as in (3). Yet, sentences such as (2) and (3) nevertheless seem to express an **eventive causal relation** between a trip/some event related to the pills and a result state of Paul becoming tired. This interpretation must involve some adaptive mechanism that turns the given state argument into a resultative state, and, in the case of (3), coerces the compositionally given object referent into a contextually plausible event.

(1)   Paul   wurde   müde   von   der   Reise.
       Paul   became   tired   from   the   trip

(2)   Paul   war   müde   von   der   Reise.
       Paul   was   tired   from   the   trip

(3)   Paul   war   müde   von   den   Tabletten.
       Paul   was   tired   from   the   pills

Secondly, besides this eventive interpretation, *von*-PPs appear to support also a **stative causal relation** as illustrated in (4). In (4), the square's property of being red is based on the redness of the leaves, which are furthermore supposed to be holistically located on the square. This interpretation most likely will also involve some kind of coercion. (Note that (4) is ambiguous, i.e., it supports also an eventive reading of the causal modifier, according to which the leaves stained the square red.)

(4)   Der   Platz   war   rot   von   den   Blättern.
       The   square   was   red   from   the   leaves

The following two diagnostics help differentiate between the two readings: (a) Only stative *von* supports the inference that the main predicate holds also for the internal NP referent at the time of the predication; see (5). (b) Only stative *von* supports the inference that the internal NP referent is located on the subject referent at the time of the predication; see (6).

(5)   a. Der   Platz   ist   rot   von   den   Blättern.   → Die   Blätter   sind   rot.
         The   square is   red   from   the   leaves   The   leaves   are   red
      b. Das   Kind   ist   müde   von   der   Reise.   ↛ Die   Reise   ist   müde.
         The   child   is   tired   from   the   trip   The   trip   is   tired

(6)   a. Der   Platz   ist   rot   von   den   Blättern.   → Die   Blätter   sind   auf   dem   Platz.
         The   square is   red   from   the   leaves   The   leaves   are   on   the   square
      b. Die   Bank   ist   dreckig von   den   Schuhen.   ↛ Die   Schuhe   sind   auf   der   Bank.
         The   bench   was   dirty   from   the   shoes   The   shoes   are   on   the   bench

As for the syntax, eventive and stative *von*-PPs can be shown to differ wrt. their adjunction site. Syntactic tests concerning sentential negation, topicalization, pseudo-clefts and manner anaphora suggest that eventive *von*-PPs are VP-modifiers, whereas stative *von*-PPs are part of the AP; see, e.g., the negation and topicalization data in (7) and (8).

(7)   a. Paul   war   (nicht)   von   der   Reise (nicht)   müde.
         Paul   was   (not)   from   the   trip   (not)   tired
      b. Der   Platz war   (nicht) von   den   Blättern   (*nicht)   rot.
         The   square was   (not)   from   the   leaves   (not)   red

(8)   a. Von   den   Blättern ist   der   Platz   rot   gewesen.   only eventive reading
         From   the   leaves   has   the   square   red   been
      b. Rot   gewesen ist   der   Platz   von   den   Blättern.   only eventive reading
         Red   been   has   the   square   from   the   leaves

The data in (2)-(8) raise the question of how compositional semantics, coercion mechanisms, and the lexicon conspire to derive the eventive and the stative reading of causal *von*-PPs in copula sentences. Furthermore, the proposed solution should comply with core ontological assumptions concerning causes and states.

Based on the findings of a corpus study, we will develop a compositional semantics for causal *von*-PPs in combination with adjectival copula sentences that combines Maienborn's (2005) K-state analysis of the copula with Moltmann's (2007, 2013) trope theory for adjectives. The proposal will be exposed in (a simplified version of) Asher's (2011) framework of a type-driven, context-sensitive compositional semantics. Specifically, we assume (9) and (10) as lexical entries for adjectives such as *müde* ('tired') and the copula *sein*, respectively: The adjective introduces a trope argument r for a concrete manifestation of tiredness and the copula introduces a K-state argument s of x being the bearer of a trope r.

(9)   *müde* ('tired'): $\lambda x\ \lambda r$: **trope** [bearer (x, r) & tiredness (r)]

(10) *sein* ('to be'): $\lambda P\ \lambda x\ \lambda s$: **state** $\exists r$: **trope** [s: P (x)(r)]

Note that Moltmann emphasizes that tropes can enter causal relations (cf., e.g., *Mary is shockingly pale*; Moltmann (2013: 301f)). That is, tropes share with events the property of being causally efficacious. Therefore we assume as a preliminary lexical entry for the causal preposition *von* the representation given in (11). That is, *von* selects two arguments of type event or trope and establishes a causal relation between them.

(11) *von* ('from'): λx: **event⊔trope** λy: **event⊔trope** [cause (x, y)]   preliminary version

In the case of (2), the type requirements of *von*'s internal argument are met straightforwardly by the event expression *the trip*. In the coercion cases (3) and (4), an object referring expression triggers a type conflict. This type clash may be resolved, however, by interpolating a mediating event or trope which must be licensed in the given context. In Asher's framework, this is modeled by assuming a so-called polymorphic type $\alpha - \alpha(\beta)$ (i.e., if a type requirement α cannot be met compositionally, α may be justified via β). Furthermore, in the case of the eventive reading, a type clash between *von*'s external argument and the copula's state argument is resolved by means of interpolating an inchoative event. This leads to (11') as final version of the lexical entry for *von*. The respective semantic representations for (2) – (4) are provided in (12).

(11') *von* ('from'): λx: **event⊔trope – event⊔trope (object)** λy: **event⊔trope – event (state)** [cause (x, y)]

(12) a. $\exists s\ \exists e\ \exists r$ [s: bearer (paul, r) & tiredness (r) & cause (the-trip, e) & ϕ (e, s)]

      b. $\exists s\ \exists e\ \exists r\ \exists e'$ [s: bearer (paul, r) & tiredness (r) & cause (e', e) & γ (e', the-pills) & ϕ (e, s)]

      c. $\exists s\ \exists r\ \exists r'$ [s: bearer (the-square, r) & redness (r) & cause (r', r) & ϕ (r', the-leaves)]

According to the proposed solution, eventive and stative readings can be derived on a compositional basis, and they differ only wrt. the ontological type of the (interpolated) arguments of 'cause'. Whether these are of type trope or event depends on the syntactic integration site of the *von*-PP (tropes if they join the AP, events if they join the VP). The remaining differences between *von*'s eventive and stative readings follow from the conceptual justification of the interpolated material in the given context. In particular, we will argue that cause (r', r) requires (a) r to be a temporary property manifestation; and (b) r' and r must be temporally and spatially overlapping.

In sum, our proposal accounts for the interpretive flexibility of causal *von*-PPs in combination with adjectival copula sentences by combining three independent resources:

- availability of two compositional integration sites, one within the AP and one at VP-level
- incorporation of adaptive mechanisms and context-sensitive type information within the lexicon
- ontological properties of tropes and events as causally efficacious categories

In more general terms, the talk aims at contributing to a Lexical Semantics that provides the link between compositional meaning constitution and richer conceptual knowledge structures.

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10-Zeiler

German causal *von*-PPs in combination with adjectival copula sentences support both an eventive and a stative reading and they appear to tolerate certain coercive adaptions of their causal relata (cf., e.g., *Paul war müde von der Reise / von den Tabletten* vs. *Der Platz war rot von den Blättern*.) Based on Maienborn's K-state analysis of the copula and Moltmann's trope theory for adjectives we develop an account for the eventive/stative ambiguity of causal *von* within Asher's (2011) framework of a type-driven, context-sensitive compositional semantics. Our proposal accounts for the observed interpretive flexibility by combining three independent resources: (a) availability of two compositional integration sites, one within the AP and one at VP-level; (b) incorporation of adaptive mechanisms and context-sensitive type information within the lexicon; (c) ontological properties of tropes and events as causally efficacious categories. In more general terms, the talk aims at contributing to a Lexical Semantics that provides the link between compositional meaning constitution and richer conceptual knowledge structures.