Equating by quantifying over kinds
Zo...als equatives in Dutch and beyond

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Outline

Introduction

- Dutch equatives involve two morphosyntactic ingredients: *zo* and *als*.
- Descriptively, zo is a parameter marker (PM) marking what is being measured
- Als is a standard marker (SM) marking the standard of comparison.

  (1)   John   is   *as*   tall   *as*   Sue   (is).
         comparee copula PM parameter SM standard (copula)
                                  (Haspelmath and Buchholz, 1998)

  (2)   Jan   is   *zo*   groot   *als*   Sue.
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  (3)   John   (*as) ran   *as/like* Mary   ran/did.
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- Rett (2013) observes that **the lack of a PM correlates with interpretive differences**: (3) only has a *manner reading* and not a *degree reading*.

- (3) can only refer to John running *in the same way* Mary did, not the same distance or same amount of time or the same number of running events.

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- Dutch *zo...als* equatives seem to be **an exception to this tendency**. In verbal equatives, the verb is marked with *zo*, exactly as with adjectival equatives (2).

  (4)   Nadine had **zo** <**als** Sigrid> gespeeld <**als** Sigrid>.
        Nadine has so   as Sigrid played   as   Sigrid
        'Nadine played as Sigrid played.'

- Nonetheless, like English verbal equatives, the only available reading here is that Nadine played *in the same way* Sigrid played, not the same number of times or duration.

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Objectives

- Provide a **compositional syntax-semantics of both adjectival and verbal equatives in Dutch** by providing the semantics of the PM *zo* and the SM *als*.

- **Compare Dutch with other Germanic languages like English and German** in terms of morphosyntactic strategies and distribution of readings.

- Demonstrate that there are **different semantic primitives for building equative constructions** across Germanic.

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Overview of analysis

- The PM *zo* compositionally introduces *kinds*. (Anderson and Morzycki, 2015).
- Assume **quantificational semantics** for *zo...als* equatives (cf. quantificational analyses for comparatives (Heim, 2000, 2006)).
- Quantificational semantics is encoded in the SM *als* (cf. Alrenga et al., 2012; Alrenga and Kennedy, 2014 for comparatives).

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Morpho-semantic Ingredients

Outline

1. Introduction

2. Analysis
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   - Composition
   - Degrees and Manners

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   - Non-equative *zo*
   - Distribution of Readings
   - Scope ambiguity

4. Cross-Germanic variation
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5. Conclusions

6. Appendix

Morpho-semantic Ingredients

- We follow Anderson and Morzycki (2015) in proposing **zo simply compositionally introduces a kind variable**.

- **kinds are taken to be a primitive type in the model**, represented here as type π.

- A kind: "the plurality of all possible objects of some type" (Chierchia, 1998; Anderson and Morzycki, 2015).

- *Zo* is a **function from kinds to properties of objects**, asserting that **the object instantiates the kind**, i.e., $^{\cup}k(o)$ (Chierchia, 1998).

- The variable *o* ranges over either states (adjectives) (e.g., Wellwood, 2015) or events (verbs).

    (5) $[\![zo]\!]$: $\lambda k_{\pi}.\lambda o.^{\cup}k(o)$

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- We deviate from Anderson and Morzycki (2015) in what contributes quantificational semantics.

- Following proposals in e.g. Alrenga et al. (2012); Alrenga and Kennedy (2014), we **attribute quantificational semantics to the SM als**.

- *Als* takes as arguments two sets of kinds and asserts that the first is a subset of the second (e.g., Rett, 2020; Hohaus and Zimmermann, 2021).

  (6) $[\![als]\!]$: $\lambda K_{\pi t}.\lambda K'_{\pi t}.\{k:K(k) = 1\} \subseteq \{k':K'(k') = 1\}$

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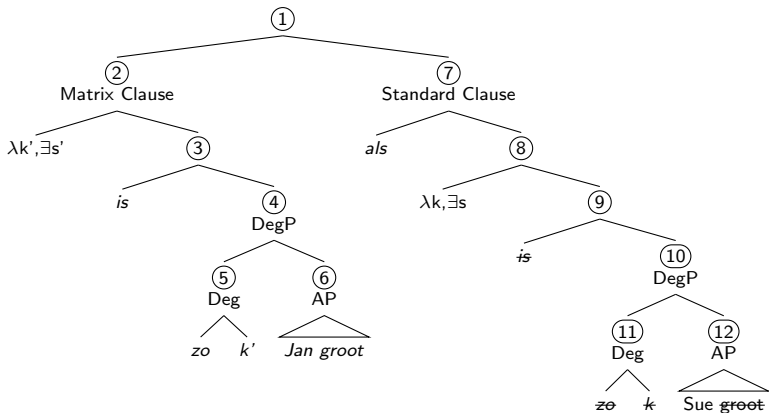Morpho-semantic Ingredients

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Outline

Composition: Adjectival Equatives

(7) Jan is **zo** groot **als** Sue.
     John is ZO ALS Sue tall ALS Sue
     'John is as tall as Sue.'

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Composition

Composition: Adjectival Equatives

- Matrix clause:

  (8)   a. $\llbracket \text{⑤} \rrbracket$: $\lambda o.^{\cup}k'(o)$
        b. $\llbracket \text{⑥} \rrbracket$: $\lambda s'.\text{TALL}(s',jan)$
        c. $\llbracket \text{③} \rrbracket$: $\lambda s'.\text{TALL}(s',jan) \wedge {}^{\cup}k'(s')$ (identical to ④, PM)
        d. $\llbracket \text{②} \rrbracket$: $\lambda k'.\exists s'[\text{TALL}(s',jan) \wedge {}^{\cup}k'(s')]$

- Standard clause:
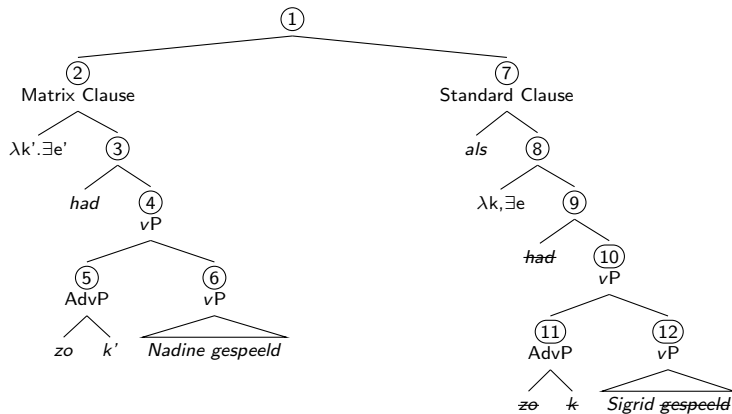
  (9)   a. $\llbracket \text{⑪} \rrbracket$: $\lambda o.^{\cup}k(o)$
        b. $\llbracket \text{⑫} \rrbracket$: $\lambda s.\text{TALL}(s,sue)$
        c. $\llbracket \text{⑨} \rrbracket$: $\lambda s.\text{TALL}(s,sue) \wedge {}^{\cup}k(s)$ (identical to ⑩, PM)
        d. $\llbracket \text{⑧} \rrbracket$: $\lambda k.\exists s[\text{TALL}(s,sue) \wedge {}^{\cup}k(s)]$

- Final steps where *als* takes the two sets of kinds as argument:

  (10) $\llbracket \text{⑦} \rrbracket$: $\lambda K'_{\pi t}.\{k:\exists s[\text{TALL}(s,sue) \wedge {}^{\cup}k(s)] = 1\} \subseteq \{k':K'(k') = 1\}$

  (11) $\llbracket \text{①} \rrbracket$: $\{k:\exists s[\text{TALL}(s,sue) \wedge {}^{\cup}k(s)] = 1\} \subseteq \{k':\exists s'[\text{TALL}(s', jan) \wedge {}^{\cup}k'(s')] = 1\}$
        'the set of state kinds Sue's height instantiates is a subset of the set of state kinds John's height instantiates'

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Composition: Verbal Equatives

(12)   Nadine had **zo** <**als** Sigrid> gespeeld <**als** Sigrid>.
       Nadine has ZO ALS Sigrid played ALS Sigrid
       'Nadine played as Sigrid played.'

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Composition

Composition: Verbal Equatives

- Matrix clause:

  (13) a. $[\![⑤]\!]$: $\lambda o.^{\cup}k'(o)$ (trace of QR of standard clause provides k')
        b. $[\![⑥]\!]$: $\lambda e'.\text{PLAY}(e',nadine)$
        c. $[\![③]\!]$: $\lambda e'.\text{PLAY}(e',nadine) \wedge {}^{\cup}k'(e')$ (identical to ④, PM)
        d. $[\![②]\!]$: $\lambda k'.\exists e'.\text{PLAY}(e',nadine) \wedge {}^{\cup}k'(e')$

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  (13) a. ⟦⑤⟧: λo.$^\cup$k'(o) (trace of QR of standard clause provides *k'*)

  b. ⟦⑥⟧: λe'.PLAY(e',*nadine*)

  c. ⟦③⟧: λe'.PLAY(e',*nadine*) ∧ $^\cup$k'(e') (identical to ④, PM)

  d. ⟦②⟧: λk'.∃e'.PLAY(e',*nadine*) ∧ $^\cup$k'(e')

- Standard clause:

  (14) a. ⟦⑪⟧: λo.$^\cup$k(o)

  b. ⟦⑫⟧: λe.PLAY(e,*sigrid*)

  c. ⟦⑨⟧: λe.PLAY(e,*sigrid*) ∧ $^\cup$k(e) (identical to ⑩, PM)

  d. ⟦⑧⟧: λk.∃e.PLAY(e,*sigrid*) ∧ $^\cup$k(e)

- Final steps where *als* takes the two sets of kinds as argument:

  (15) ⟦⑦⟧: λK'$_{\pi t}$.{k:∃e.PLAY(e,*sigrid*) ∧ $^\cup$k(e) = 1} ⊆ {k':K'(k') = 1}

  (16) ⟦①⟧: {k:∃e.PLAY(e,*sigrid*) ∧ $^\cup$k(e) = 1} ⊆ {k':K'(k') = 1} ⊆
  {k':∃e'.PLAY(e',*nadine*) ∧ $^\cup$k'(e') }
  'the set of event kinds Sigrid's playing instantiates is a subset of the the set of
  event kinds Nadines's playing instantiates'

Composition: Verbal Equatives

- Matrix clause:

  (13) a. $[\![⑤]\!]$: $\lambda o.^{\cup}k'(o)$ (trace of QR of standard clause provides k')
       b. $[\![⑥]\!]$: $\lambda e'.\text{PLAY}(e',nadine)$
       c. $[\![③]\!]$: $\lambda e'.\text{PLAY}(e',nadine) \wedge {}^{\cup}k'(e')$ (identical to ④, PM)
       d. $[\![②]\!]$: $\lambda k'.\exists e'.\text{PLAY}(e',nadine) \wedge {}^{\cup}k'(e')$

- Standard clause:

  (14) a. $[\![⑪]\!]$: $\lambda o.^{\cup}k(o)$
       b. $[\![⑫]\!]$: $\lambda e.\text{PLAY}(e,sigrid)$
       c. $[\![⑨]\!]$: $\lambda e.\text{PLAY}(e,sigrid) \wedge {}^{\cup}k(e)$ (identical to ⑩, PM)
       d. $[\![⑧]\!]$: $\lambda k.\exists e.\text{PLAY}(e,sigrid) \wedge {}^{\cup}k(e)$

- Final steps where *als* takes the two sets of kinds as argument:

  (15) $[\![⑦]\!]$: $\lambda K'_{\pi t}.\{k:\exists e.\text{PLAY}(e,sigrid) \wedge {}^{\cup}k(e) = 1\} \subseteq \{k':K'(k') = 1\}$

  (16) $[\![①]\!]$: $\{k:\exists e.\text{PLAY}(e,sigrid) \wedge {}^{\cup}k(e) = 1\} \subseteq \{k':K'(k') = 1\} \subseteq$
       $\{k':\exists e'.\text{PLAY}(e',nadine) \wedge {}^{\cup}k'(e') \}$
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Degrees and Manners

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   - Non-equative *zo*
   - Distribution of Readings
   - Scope ambiguity

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Degrees and Manners

- What is a state/event kind?

  'There is a sense that, in the case of states associated with gradable predicates, **degrees are a central part of what states are for**. The principal reason we talk about such states is to **compare them in a scalar fashion to others, or to a standard**.'

  '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 and Morzycki, 2015, p. 811)

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Degrees and Manners

- Degrees and manners are special sorts of properties of states and kinds since they correspond to **particular pluralities of such objects**.

- Anderson and Morzycki (2015): degrees and kinds are **distinguished properties** of eventualities

- *Zo* accesses only such properties, implemented as a presupposition.

  (17) a. $\text{DIST}(o,P)$ is true iff P is among the distinguished properties of o.

         b. $[\![zo]\!]$: $\lambda k.\lambda o{:}\text{DIST}(o,{}^{\cup}k).{}^{\cup}k(o)$

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Non-equative *zo*

Supporting Evidence: non-equative *zo*

- **we expect zo to be a general kind introducer referring to degrees or manners**.

- This is indeed what we find; in non-equative contexts, *zo* behaves like an **anaphoric pro-form**, referring to contextually provided degrees or manners.

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Non-equative *zo*

Supporting Evidence: non-equative *zo*

(18) Jan is 1.80m groot. Jane is ook **zo** groot.
      John is 1.80m tall   Jane is also ZO tall
      'John is 1.80m tall and Jane is 1.80m tall too.'
      # 'John is 1.80m tall, and Jane is also tall at 1.85m.'
                                          (proform for degrees, not evaluative)

(19) Jan gedroeg zich   erg goed vandaag. Jane gedroeg zich   ook **zo**.
      John behave himself very bad today   Jane behave herself also ZO
      'John behaved badly today and Jane behaved so too.'
                                                    (proform for manners)

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                                        (proform for degrees, not evaluative)

(19) Jan gedroeg zich erg goed vandaag. Jane gedroeg zich ook **zo**.
      John behave himself very bad today Jane behave herself also ZO
      'John behaved badly today and Jane behaved so too.'
                                        (proform for manners)

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Distribution of Readings

Supporting Evidence: Distribution of Readings

- Sensitivity to syntactic category of the parameter in the distribution of degree and manner readings **carries over to equatives** if *zo* introduces kinds that are distinguished properties of its complement.

- Indeed, *zo…als* equatives only have **degree readings with adjectival parameters**, and only have **manner readings with verbal parameters**.

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Supporting Evidence: Adjectival Equatives Only Have Degree Readings

(20) Jan   is *zo* *<*als* Sue> groot <*als* Sue>.
      John is ZO   ALS Sue tall   ALS Sue
      'John is as tall as Sue.'

(21) Continuations for (20)
      a. #Jan   is 1m85 en   Sue 1m80.
         John is 1m85 and Sue 1m80
         'John's height is 1m85 and Sue's is 1m80.'   (evaluative)
      b. Jan   is 1m68 en   Sue ook.
         John is 1m68 and Sue too
         'John's height is 1m68 and Sue is 1m68 too.'   (degree)

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Distribution of Readings

Supporting Evidence: Verbal Equatives Only Have Manner Readings

(22)   Nadine had **zo** *<als* Sigrid> gespeeld *<als* Sigrid>.
       Nadine has ZO ALS Sigrid   played   ALS Sigrid
       'Nadine played as Sigrid played.'

(23)   Continuations for (22)
        a.   Namelijk moedig.
              namely   brave
              'Namely bravely.'   (manner)
        b. #Namelijk vier keer
              namely   four times
              'Namely four times.'   (degree)

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Distribution of Readings

Supporting Evidence: Verbal Equatives Only Have Manner Readings

- Dutch Verbal equatives never have degree readings **even with particular
  verbs classes that have been argued to involve degree variables in
  their semantics**.

- Deadjectival degree achievement verbs, which indicate that some object
  has **undergone a change in holding some degree of a property over
  the course of an event** (e.g., Kennedy and Levin, 2008).

- It seems **zo can only access the manner properties of the event**.

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Distribution of Readings

Supporting Evidence: Verbal Equatives Only Have Manner Readings

(24)   We hebben de pizza **zo** afgekoeld   **als** de lasagne
       we have   the pizza ZO cooled.down ALS the lasagna
       'We cooled down the pizza like the lasagna.'

   a.   Namelijk door te blazen.
        namely   by   to blow
        'Namely by blowing.'
   b. #Namelijk tot   21 graden.
        namely   until 21 degrees
        'Namely to 21 degrees.'

(degree achievements with *zo...als*)

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Scope ambiguity

Supporting Evidence: Scope Ambiguity with Matrix Modals

- Evidence for a quantificational analysis of comparatives: **the scope of comparison interacts with other scope-taking elements like matrix modal verbs** (Heim, 2000, 2006, *a.m.o.*).

  (25) CONTEXT: My draft is 20 pages long.
    a. De definitieve versie mag exact   vijf pagina's langer zijn
       the final   version may exactly five pages   longer be
       dan de kladversie.
       than the draft
       'The final paper is allowed to be exactly five pages longer than this
       draft.'
    b. Maar zelfs tien pagina's meer dan wat je   nu hebt is nog
       but   even ten pages   more than what you now have is still
       oké.
       okay
       'But even ten pages more than what you have now will still be
       okay.'   (minimum length 25 pages, modal ≫ DegP)
    c. Maar in geen geval langer.
       but in no case longer
       'But definitely not longer!'

                                  (maximum length 25 pages, DegP ≫ modal)

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Supporting Evidence: Scope Ambiguity with Matrix Modals

- The **same scope ambiguity for adjectival equatives**. This is derived **by attaching the als-clause to the embedded clause under the modal, or to the matrix clause above the modal**.

  (26) CONTEXT: You just submitted your B.A. thesis and proudly show it to me. I inquire after its length and you tell me that it's 60 pages. I'm currently writing my master's thesis and I tell you...

  a. Mijn master thesis mag net *zo* lang zijn *als* jouw bachelor
     my master's thesis may exactly zo long be ALS your bachelor
     paper.
     paper
     'My master's thesis is allowed to be exactly as long as your B.A. thesis.'

  b. Maar vijf pagina's korter dan wat je nu ingediend hebt zou
     but 5   pages   shorter than what you now submitted have would
     ook al   oké zijn en tot 70 pagina's is ook nog toegelaten.
     also already okay be and until 70 pages   is also still allowed
     'But even 5 pages shorter would be okay and 70 pages is allowed as well.'
                                                        (modal ≫ *zo...als*)

  c. En geen pagina meer!
     and no   page   more
     'And not a single more!'   (*zo...als* ≫ modal)
                                        (based on Hohaus and Zimmermann, 2021)

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    a.   Mijn master   thesis mag net   ***zo*** lang zijn ***als*** jouw bachelor
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         and no   page   more
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Supporting Evidence: Scope Ambiguity with Matrix Modals

- **The same scope ambiguity holds for verbal equatives**.

  (27) CONTEXT: A foreign colleague can spend their research funds on equipment, books, and conference travel. She asks about how I may spend my funds and I reply...

  a. Ik mag mijn beurs   exact   *zo* <*als* jij> gebruiken <*als* jij>.
      I may my funding exactly ZO ALS you use   ALS you
      'I may spend my funds in exactly the same way as you.'

  b. Maar ik mag ze ook gebruiken om sprekers uit te nodigen.
      but I may her also use   to speakers PRT PRT invite
      'But I may also spend it on inviting speakers.'   (modal ≫ *zo...als*)

  c. En voor niets   anders!
      and for nothing else
      'And nothing else!'   (*zo...als* ≫ modal)

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      and for nothing else
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Cross-Germanic variation: English

- English adjectival equatives use a PM, English verbal adjectives do not.
- The presence of a PM corresponds with a degree reading.
- The absence of a PM corresponds with a property/manner reading.

(28)   a.   Sue is **as** tall as Bill, but she is short

(degree reading, non-evaluative)

b.   Sue is tall **like** Bill, # but she is short.

(no PM, property reading, evaluative)

(29)   a.   Kim (***as**) cooled the pizza as Sue did, namely by blowing on
it.   (no PM, manner reading)

b.   Kim cooled the solution **as much** as Sue did, by 10 degrees
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English PM as a Degree Quantifier

- Rett (2013) analyzes the **English PM as as a degree quantifier**, and **SM as as a generalized set abstractor**.

  (30) a. $\llbracket \text{as}_{PM} \rrbracket$: $\lambda D.\lambda D'.\text{MAX}(D) \leq \text{MAX}(D')$
       b. $\llbracket \text{as}_{SM} \rrbracket$: $\lambda P^{\delta}.\lambda \alpha.\llbracket P^{\delta} \rrbracket^{[\delta \rightarrow \alpha]}$

  (Rett, 2013, p. 1107-1108)

- Identical to standard analyses of comparatives, differing only in the relation introduced by the PM ($\leq$ as compared to $<$ in comparatives).

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English Verbal Equatives

- **Manner is taken by Rett (2013) to be a semantic primitive** introduced by a null head (ρ) that can be abstracted over.

- ρ takes an event predicate and introduces a relation $\Re$ between an event variable and a free manner variable.

  (31)   John danced as Sue danced.
      a. $[\![John\ danced]\!] = [\![\text{OP}_m\ John\ danced\ \rho^m]\!] = \lambda m.\exists e[\text{DANCED}(e,john) \wedge \Re(e,m)]$
      b. $[\![as\ Sue\ danced]\!] = [\![as\ Sue\ danced\ \rho^{m'}]\!]$: $\lambda m'.\exists e'[\text{DANCED}(e,sue) \wedge \Re(e',m')]$
      c. $[\![John\ danced\ as\ Sue\ danced]\!]$: $\exists m,e,e'[\text{DANCED}(e,john) \wedge \Re(e,m) \wedge \text{DANCED}(e,sue) \wedge \Re(e',m)]$ PREDICATE MODIFICATION, EXISTENTIAL CLOSURE
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- In prose: **there is a manner that characterizes John and Mary's dancing**.

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English vs. Dutch

- **Presence of a PM (zo) in Dutch adjectival equatives correlates with degree readings**, exactly as in English. A PM blocks property/manner readings.

- Presence of a PM in Dutch does not block manner readings in verbal equatives; in fact, it is degree readings that are blocked. This alone necessitates a different analysis of the PM zo.

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Cross-Germanic Variation: German

- Morphosyntax of German equatives is closely related to Dutch
- It uses a PM *so* and an SM *wie*.
- Both *so* and *wie* are **ambiguous between being anaphoric to kinds, degrees, and manners in non-equative contexts** (Anderson and Morzycki, 2015; Umbach et al., 2022).
- **This ambiguity carries over to equative contexts**.

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German Adjectival Equatives

- German adjectival equatives **permit both degree and property readings**.
- Non-gradable adjectives in equatives
- In English and Dutch this is ungrammatical or has a highly coerced (degree) reading along some gradable scale of prototypicality (*x is as much a prototypical amphibian as y is*) (Rett, 2013).

  (32)   Nadine ist *so* groβ *wie* Anna.
         Nadine is so tall WIE Anna
         'Nadine is as tall as Anna.'   (degree)

  (33)   Freddie der Frosch ist *so* amphibisch *wie* Moritz der Molch.
         Freddie the frog   is SO amphibian WIE Moritz the newt
         'Fred the frog is amphibian in the same way Moritz the newt is;
         they share all relevant amphibian properties.'   (property)
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- Degree achievement verbs

  (34)   Wir haben die pizza *so* abgekühlt *wie* die lasagn.
         we   have   the pizza SO cooled   WIE the lasagne
         'We cooled the pizza as we cooled the lasagne.'

    a.   Nämlich durch   Pusten.
         namely   through blow
         'Namely through blowing on it.'
    b.   Nämlich auf 21 grad   raumtemperatur.
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German PM as a (Partially) Type-Neutral Quantifier

- Hohaus and Zimmermann (2021) Propose that **so is a quantifier that can quantify over either degrees (gradable adjectives) or properties (of individuals or events)**.

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- German and Dutch pattern together morpho-syntactically; **PMs are used across all types of equatives** regardless of syntactic category of the parameter.

- The distribution of degree versus manner readings crucially differ.

- An analysis of Dutch *zo* as a type-neutral quantifier along the lines of German *so* will face **the challenge of trying to rule out the property version with adjectival equatives**, and **the degree version with verbal equatives involving a degree achievement verb parameter**.

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   - Morpho-semantic Ingredients
   - Composition
   - Degrees and Manners

3. Evidence
   - Non-equative *zo*
   - Distribution of Readings
   - Scope ambiguity

4. Cross-Germanic variation
   - English
   - German

5. Conclusions

6. Appendix

Conclusions

- Proposal: PM **zo compositionally introduces kinds** and **asserts its complement instantiates a kind**, **SM als is an equative quantifier over kinds**.

- The **proposed semantics is cross-categorial and identical across adjectival and verbal equatives**.

- Distribution of degree versus manner readings across syntactic categories arises from **what count as distinguished properties of states versus events**.

- Supporting evidence:
  - *zo* has anaphoric pro-form uses in non-equative contexts
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- **Dutch patterns with English in the distribution of degree versus manner readings**;
- This therefore necessitates **a non-unified analysis of equatives even within the Germanic family**;
- **different semantic primitives are needed** in the analyses of PMs in these languages

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Outline

Appendix: Type-Shifting the Standard Clause

- While the proposed analysis largely follows Anderson and Morzycki (2015), we differ in what introduces quantificational semantics. Proposal for Dutch: the SM *als* is a quantifier over kinds.
- Anderson and Morzycki (2015) do not propose a dedicated quantifier over kinds.
- Rather, they assume that **type-shifting rules apply to the standard clause** to resolve type-mismatches with the kind-introducing PM in equatives.

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- This is motivated in part by the language they investigate in detail: Polish.
- In Polish, **the PM appears to be tak, and the standard is marked by jak**, which is typically translated as a *wh*-word that is ambiguous between degree and manner much like German *wie*.

(35) Floyd jest *tak* wysoki *jak* Clyde.
      Floyd is TAK tall   WH Clyde
      'Floyd is as tall as Clyde.'

(36) Floyd śpiewał *tak jak* Clyde śpiewał.
      Floyd sang   TAK WH Clyde sang
      'Floyd sang as Clyde sang.'

                                (Anderson and Morzycki, 2015, p. 816-817)

Appendix: Type-Shifting the Standard Clause

- Anderson and Morzycki (2015) note the **morphological similarity between tak and jak in Polish**; taking this seriously, they assume **both to be elements that introduce kinds**.

    (37) a. $[\![tak]\!]$: $\lambda k.\lambda o.^\cup k(o)$
          b. $[\![jak]\!]$: $\lambda k.\lambda o.^\cup k(o)$

- The standard clause in both adjectival and verbal equatives therefore denotes predicates of kinds.

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(38) a. Floyd jest **tak** wysoki **jak** Clyde.
          Floyd is TAK tall WH Clyde
          'Floyd is as tall as Clyde.'
      b. ⟦ λk ~~jest~~ [$_{AP}$ [$_{DegP}$ jak k Clyde ~~wysoki~~] ⟧:
          λk.∃s[TALL(s,*clyde*) ∧ $^∪$k(s)]

(adjectival equative)

(39) a. Floyd śpiewał **tak jak** Clyde śpiewał.
          Floyd sang TAK WH Clyde sang
          'Floyd sang as Clyde sang.'
      b. ⟦ λk jak k Clyde śpiewał ⟧:
          λk.∃e[SING(e,*clyde*) ∧ $^∪$k(e)]

(verbal equative)

Appendix: Type-Shifting the Standard Clause

- Assuming the standard analysis in the comparatives literature that the standard clause is a complement of the degree morpheme, **the predicate of kinds denoted by the standard clauses are assumed to be complements to tak**, which requires a kind as its first argument.
- This is the familiar type-mismatch problem; however, **the standard clause is not a quantifier in the analysis** and therefore cannot undergo QR.
- At this point of the composition, Anderson and Morzycki (2015) assume that **type-shifting rules apply to resolve such a type-mismatch**. Two rules such rules are widely assumed in the literature: IOTA SHIFT or EXISTENTIAL CLOSURE SHIFT.

Appendix: Type-Shifting the Standard Clause

(40)   IOTA SHIFT (from $<\tau,t>$ to τ, where τ is any atomic type):
       shift $P_{\tau t}$ to $\iota x_\tau[P(x)]$

                                                                      (preferred when defined)

(41)   EXISTENTIAL CLOSURE SHIFT (from $<\tau,t>$ to $<<\tau,t>,t>$):
       shift $P_{\tau t}$ to $\lambda Q_{\tau t}.\exists x_\tau[P(x) \wedge Q(x)]$

                                                                      (dispreferred)

                                                (Anderson and Morzycki, 2015, p. 814)

Appendix: Type-Shifting the Standard Clause

- With that much in place, Anderson and Morzycki (2015) suggest that
  **different type-shifting rules are employed in adjectival and verbal
  equatives**.
- The default IOTA SHIFT is employed in the standard clause of adjectival
  equatives.
- This is because with degree state kinds, **there is indeed a unique state
  kind that any state instantiates**, namely, the equivalence class of states
  (degrees) that it is a member of.
- IOTA SHIFT, is however, undefined with verbal equatives; **there is no
  unique kind or manner that an event instantiates**. EXISTENTIAL
  CLOSURE SHIFT is employed for verbal equatives instead.

Appendix: Type-Shifting the Standard Clause

- Adjectival equatives:

  (42) Floyd jest **tak** wysoki **jak** Clyde.
        Floyd is TAK tall WH Clyde
        'Floyd is as tall as Clyde.'
      a. $[\![\lambda k\ jest\ [_{AP}\ [_{DegP}\ jak\ k\ Clyde\ \text{wysoki}\ ]\ ]\!]$:
          $\lambda k.\exists s[\text{TALL}(s, clyde) \wedge {}^{\cup}k(s)]$ (standard clause)
      b. $[\![\ \text{SHIFT}\ \lambda k\ jest\ [_{AP}\ [_{DegP}\ jak\ k\ Clyde\ \text{wysoki}\ ]\ ]\!]$:
          $\iota k[\exists s[\text{TALL}(s, clyde) \wedge {}^{\cup}k(s)]]$ (shift standard clause)
      c. $[\![\ [\ tak\ \text{SHIFT}\ \lambda k\ jest\ [_{AP}\ [_{DegP}\ jak\ k\ Clyde\ \text{wysoki}\ ]\ ]\ ]\!]$:
          $\lambda o.{}^{\cup}\iota k[\exists s[\text{TALL}(s, clyde) \wedge {}^{\cup}k(s)]](o)$ (tak complement)
      d. $[\![Floyd\ jest\ wysoki]\!]$: $\lambda s'.\text{TALL}(s, floyd)$ (matrix clause)
      e. $[\![\ [\ tak\ \text{SHIFT}\ \lambda k\ jest\ [_{AP}\ [_{DegP}\ jak\ k\ Clyde\ \text{wysoki}\ ]\ ]\ [\ Floyd\ jest\ wysoki\ ]\ ]\!]$:
          $\lambda s'.\text{TALL}(s, floyd) \wedge {}^{\cup}\iota k[\exists s[\text{TALL}(s, clyde) \wedge {}^{\cup}k(s)]](s')$

- In prose: **Floyd's tallness state instantiates the unique degree state kind that Clyde's tallness instantiates**.

Appendix: Type-Shifting the Standard Clause

- Verbal equatives:

  (43) Floyd śpiewał **tak jak** Clyde śpiewał.
        Floyd sang   TAK WH Clyde sang
        'Floyd sang as Clyde sang.'

    a. ⟦ λk [*jak k Clyde śpiewał*] ⟧: λk.∃e[SING(e,*clyde*) ∧ ∪k(e)]
        (standard clause)

    b. ⟦ SHIFT λk *jak k Clyde śpiewał* ⟧:
        λQ.∃k[∃e[SING(e,*clyde*) ∧ ∪k(e)] ∧ Q(k)]   (shift standard clause)

    c. ⟦ λk' [*Floyd śpiewał tak k'*] ⟧: λk'.∃e'[SING(e,*floyd*) ∧ ∪k'(e')]
        (matrix clause after QR of standard clause)

    d. ⟦SHIFT λk *jak k Clyde śpiewał*⟧ ⟧ (⟦λk' [*Floyd śpiewał tak k'*]⟧):
        ∃k[∃e[SING(e,*clyde*) ∧ ∪k(e)] ∧ ∃e'[SING(e,*floyd*) ∧ ∪k'(e')]]

- In prose: **there is a manner kind which both Floyd's singing and Clyde's singing instantiates**.

Appendix: Type-Shifting the Standard Clause

- Anderson and Morzycki's analysis involving type-shifting leads to several consequences. First, **in adjectival equatives the standard clause is effectively a degree (state kind) definite description** (see e.g., Penka, 2016 for German). That means it is **interpreted in-situ and does not undergo QR**.
- **QR is motivated only for verbal equatives**. In addition, verbal equatives involve **existential quantification over manners (event kinds)**.

Appendix: Type-Shifting the Standard Clause

- It is clear that the analysis **cannot apply to Dutch because of two predictions** (it is an empirical question if these hold in Polish).
- <u>Prediction I</u>: since the standard clause in adjectival equatives is a degree definite description interpreted in-situ, **it should not show any kind of scopal interactions with other scope-taking elements**.
- This, of course, seems to not be borne out in Dutch adjectival equatives, which exhibits scope ambiguities with matrix modal verbs (26).
- In fact, Anderson and Morzycki (2015) provide the same analysis for comparatives, where the presence scope ambiguities is well-established (in English) since Heim (1985, 2000, 2006).

Appendix: Type-Shifting the Standard Clause

- Prediction II: **Verbal equatives in their analysis do involve an existential quantifier** and therefore, QR and scope-taking. This, however, predicts rather weak truth conditions for verbal equatives; **two events need only share a manner in which it is carried out** to satisfy this, e.g., (43-d).

- This is, in fact, **the same prediction made by Rett's analysis for English**, which involves PREDICATE MODIFICATION of two sets of manners and then EXISTENTIAL CLOSURE of the manner variable.

- Two further consequences follow from a meaning built on existential quantifcation over manners.

Appendix: Type-Shifting the Standard Clause

- First, we expect that the context below, which makes explicit that **the two events involve just one manner in common**, to be felicitiously described by the (English) verbal equative, which **does not seem to be borne out**.

    (44)   CONTEXT: Floyd and Clyde both sang at the party last night. Floyd sang really melodically and slowly. Clyde sang melodically as well, though he sang really hurriedly.
        a.   #? Floyd sang as Clyde sang.
        b.   #? Clyde sang as Floyd sang.

Appendix: Type-Shifting the Standard Clause

- Rather, a stronger meaning seems to be described by the verbal equative; it requires the comparee event to have **at least all of the same manners of the standard event, if not more**.

- In other words, this is **the sub-set relation**, as has been standardly assumed for equative quantifiers and also adopted here for Dutch.

  (45) CONTEXT: Floyd and Clyde both sang at the party last night. Clyde sang really melodically and slowly. Floyd sang really melodically and slowly too, but also really goofily.

      a. Floyd sang as Clyde sang (though Floyd also sang goofily).
      b. ??Clyde sang as Floyd sang (though Floyd also sang goofily).

Appendix: Type-Shifting the Standard Clause

- Finally, even if there is QR of the existential quantifier over kinds in Anderson and Morzycki's analysis, it is unclear if it would explain the scope ambiguity in verbal equatives, as in Dutch (27) or in German (Hohaus and Zimmermann, 2021).

- Again, this seems to be because existential quantification seems too weak to capture the relevant interpretations.

Appendix: Type-Shifting the Standard Clause

- Even with QR, **the relevant interpretations seem indistinguishable**, which is not what is observed in Dutch, where two distinct interpretations are available.

  (46) CONTEXT: A foreign colleague can spend their research funds on equipment, books, and conference travel. She asks about how I may spend my funds and I reply...

  Ik mag mijn beurs   exact   *zo* <*als* jij> gebruiken <*als* jij>.
  I   may my funding exactly ZO ALS you use   ALS you

  'I may spend my funds in exactly the same way as you.'
  a. $\exists w'[wRw' \wedge \exists k[$colleague spends her funds in k-manner in w' $\wedge$ I spend my funds in k-manner in w'], i.e., some world where we happen to spend funds identically
  b. $\exists k[$colleague uses her funds in k-manner in w $\wedge$ $\exists w'[wRw' \wedge$ I spend my funds in k-manner in w'], i.e., there is some k-manner colleague spends her funds and there is some world I spend my funds in k-manner