Equating by quantifying over kinds: *Zo...als* equatives in Dutch

Comparative Germanic Syntax Workshop 36, The University of Chicago, 14-15 Oct 2022

Jianrong Yu & Lena Heynen
Center for Research in Syntax, Semantics, and Phonology (CRISSP), KU Leuven
jianrong.yu@kuleuven.be,lena.heynen@kuleuven.be

The data: Dutch *zo...als* equatives

- Equative constructions in Dutch involve using the morpheme *zo*, combined with a standard clause introduced by the standard marker (SM) *als*.
- This applies to both adjectival and verbal equatives; the only difference concerns the linear position of the standard *als*-clause.
- The *als*-clause obligatorily 'right extraposes' with adjectival equatives but can be *in-situ* next to *zo* in verbal equatives (Corver 2018).

Adjectival equatives

(1) Jan is ***zo*** *<***als*** Sue> groot <***als*** Sue>.
John is so as Sue tall as Sue
'John is as tall as Sue.'

Verbal equatives

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

- The morpheme *zo* is a cross-categorial proform, replacing either degrees with adjectives or manners with verbs in non-equative contexts.

Proform *zo*

(3) Jan is 1.70m groot. Jane is ook ***zo*** groot.
John is 1.70m tall Jane is also so tall
'John is 1.70m tall and Jane is 1.70m tall too.'
'John is 1.70m tall, and Jane is also tall at 1.75m.'
(proform for degrees, not evaluative)

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

Zo...als equatives track degrees or manners like *zo*

- *Zo...als* equatives produce only degree readings or manner readings with adjectives and verbs just like *zo* in non-equatives.
- This can be brought out by testing what sorts of continuations are felicitous with (1) and (2).
- (5-a) is infelicitous as a continuation for (1). This entails that (1) must equate degrees. (6-b) is infelicitous as a continuation for (2). This means (2) must equate only manners.

(5) Continuations for (1)
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.'

(6) Continuations for (2)
a. Namelijk moedig.
namely brave
'Namely bravely.'
b. #Namelijk vier keer
namely four times
'Namely four times.'

The analysis I: Quantifying over kinds

MAIN INGREDIENTS: ANDERSON AND MORZYCKI (2015)

- *Zo* is a proform introducing *kinds*, an ontological primitive in the grammar (semantic type π).
- States and events, the denotations of adjectives and events respectively, are taken to *instantiate kinds*.
- States and events instantiating kinds return degrees and manners respectively as *distinguished properties*.
- *Als* is an equative quantifier relating two sets of kinds in a subset relation.

The individual pieces

- *Zo* compositionally introduces a kind variable *k*, producing a type neutral property. The variable *o* ranges over either states *s* or *e*.
- *Als* is an equative quantifier over kinds, taking two sets of kinds *K* as arguments and asserting the first set is a subset of the second.

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

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

Composition: Adjectival equatives

- Adjectival equatives have the structure in (9), assuming adjectives denote simple properties of states (Anderson and Morzycki 2015, Wellwood 2015).
- We assume that the standard introduced by *als* is clausal involving ellipsis under identity with the matrix clause (e.g., Heim 2000, Rett 2013).

(9) Adjectival equative (1) :
$[[\lambda k'_i\, [\, Jan_k$ *is* $[\, [\ \mathbf{zo}\ k'_i\ ]\ t_k$ *groot*$]]]$ $[\mathbf{als}\ [\, \lambda k_j\, [\, Sue_h$ *is* $[\, [\ \mathbf{zo}\ k_j\ ]\ t_h$ *groot*$]]]]$]
a. $[\![[\, \lambda k_j\, [\, Sue_h$ *is* $[\, [\ \mathbf{zo}\ k_j\ ]\ t_h$ *groot* $]\,]\,]\,]\!]$: $\lambda k.\exists s[\text{TALL}(s,sue) \wedge {}^{\cup}k(s)]$
b. $[\![[\, \mathbf{als}\ [\, \lambda k_j\, [\, Sue_h$ *is* $[\, [\ \mathbf{zo}\ k_j\ ]\ t_h$ *groot* $]\,]\,]\,]\,]\!]$: $\lambda K'.\{k{:}\exists s[\text{TALL}(s,sue) \wedge {}^{\cup}k(s)] = 1\} \subseteq \{k'{:}K'(k') = 1\}$
c. $[\![\lambda k'_i\, [Jan_k$ *is* $[\, [\ \mathbf{zo}\ k_i\ ]\ t_k$ *groot* $]\,]]\!]$: $\lambda k'.\exists s'[\text{TALL}(s',jan) \wedge {}^{\cup}k'(s')]$
d. $[\![(1)]\!]$: $\{k{:}\exists s[\text{TALL}(s,sue) \wedge {}^{\cup}k(s)] = 1\} \subseteq \{k'{:}\exists s'[\text{TALL}(s',jan) \wedge {}^{\cup}k'(s')] = 1\}$
'the set of state kinds Sue's height instantiates is a subset of the set of state kinds John's height instantiates (i.e., degree of tallness)'

- *Zo* is a functional head in the extended adjectival projection. It combines with a kind free variable and then combines with an adjectival projection via generalized PREDICATE MODIFICATION.
- Because it selects for an AP, the *als*-clause standard can never appear '*in-situ*' right next to *zo*, and appears obligatorily 'extraposed' (Corver 2018).
- The free variable is obligatorily abstracted over at the propositional level, assuming the subject of the AP is introduced low, followed by EXISTENTIAL CLOSURE of the state variable.
- Because *zo* is a head in an extended AP, the composition of the matrix and standard clause will be identical.
- Attributing quantificational semantics to *als* captures the parallels with *zo* in non-equative contexts; it uniformly introduces kinds and equative semantics is contributed by the SM (Alrenga et al. 2012, cf. Rett 2013).

The analysis II: Quantifying over kinds

Composition: Verbal equatives

- Verbal equatives compose in exactly the same way as adjectival equatives in the standard clause: *zo* takes a free kind variable and attaches to the VP with a VP-internal subject.
- They differ in the matrix clause: here, we propose *zo* takes the *als*-clause as its complement. It can therefore appear *in-situ* following *zo*, or be extraposed to the right periphery.
- The type-mismatch between *zo* and the *als-clause* triggers QUANTIFIER RAISING (QR) of the *als*-clause, which can be optionally overt to the right (cf. Bhatt and Pancheva 2004). QR triggers abstraction over the *als*-clause's trace, producing the second argument of *als*.
- The different linear positions of the *als*-clause is due to the option of either spelling out the lower or higher copy of the QR chain.

(10) Verbal equative (2) :
$[[\lambda k'_i\, [Nadine_k$ *had* $[\, [\ \mathbf{zo}\ k'_i\ ]\ t_k$ *gespeeld*$]]$ $[\mathbf{als}\ [\lambda k_j\, [\, Sigrid_h$ *had* $[\, [\ \mathbf{zo}\ k_j\ ]\ t_h$ *gespeeld*$]]]]_i$]
a. $[\![[\, \lambda k_j\, [\, Sigrid_h\, [\, [\ \mathbf{zo}\ k_j\ ]\ t_h$ *gespeeld* $]\,]\,]\!]$: $\lambda k.\exists e[\text{PLAY}(e,sigrid) \wedge {}^{\cup}k(e)]$
b. $[\![[\mathbf{als}\ [\ \lambda k_j\ [\ Sigrid_h\ [\ [\ \mathbf{zo}\ k_j\ ]\ t_h$ *gespeeld* $]\ ]\ ]\ ]\!]$: $\lambda K'_{\pi t}.\{k{:}\exists e[\text{PLAY}(e,sigrid) \wedge {}^{\cup}k(e)] = 1\} \subseteq \{k'{:}K'(k') = 1\}$
c. $[\![\lambda k'_i\, [Nadine_k$ *had* $[\, [\ \mathbf{zo}\ k'_i\ ]\ t_k$ *gespeeld* $]\,]]\!]$: $\lambda k'.\exists e'[\text{PLAY}(e',nadine) \wedge {}^{\cup}k'(e')]$
d. $[\![(2)]\!]$: $\{k{:}\exists e[\text{PLAY}(e,sigrid) \wedge {}^{\cup}k(e)] = 1\} \subseteq \{k'{:}\exists e'[\text{PLAY}(e',nadine) \wedge {}^{\cup}k'(e')] = 1\}$
'the set of event kinds Sigrid's playing instantiates is a subset of the the set of event kinds Nadines's playing instantiates (i.e., manner of playing)'

Supporting evidence

- The analysis takes seriously the use of the proform replacing degrees and manners in the language in constructing equatives (e.g., Anderson and Morzycki 2015).
- It also captures the distribution of degree versus manner readings in equatives: the distinguished properties of states (adjectives) are degrees while those of events (verbs) are manners. This is observed with *zo* in both equative and non-equative contexts.
- The presence of an equative quantifier predicts scope-ambiguities with other scope-taking elements, such as with a matrix modal verb (Heim 2000, 2006).
- This is not surprising for adjectival equatives which involve degrees like comparatives, but verbal equatives equating manners also demonstrate similar scope ambiguities. This means a quantificational analysis is needed (Hohaus and Zimmermann 2021, cf. Rett 2013).

(11) 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** gebruiken **als** jij de jouwe.
I may my funding exactly so use as you the yours
'I may spend my funds in exactly the same way as you.'

(12) 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* in (11)
$\exists w'[wRw' \wedge [\{k{:}$ I use my funds in k-manner in w'$\} = \{k'{:}$ colleague uses her funds in k'-manner in w'$\}]$, i.e., some world where we use funds identically, not all worlds

(13) En voor niets anders!
and for nothing else
'And nothing else!' *zo...als* ≫ Modal in (11)
$\{k'{:}$ colleague uses her funds in k'-manner in w$\} = \{k{:}\ \exists w'[wRw' \wedge$ I use my funds in k-manner in w'$\}]$, i.e., the manners colleague uses her funds is equal to all possible manners I can use mine

Morpho-semantic variation in Germanic

PMs correlating with degree readings: English

- Haspelmath and Buchholz (1998) survey 48 European languages and suggest that verbal equatives typically do not have PMs while adjectival equatives do.
- Rett (2013) proposes this correlates with the lack of degree readings in verbal equatives. In English, degree readings are impossible even with, e.g., degree achievement verbs in (14).
- Rett analyzes the English PM 'as' as an equative degree quantifier. Verbal equatives in English lack PMs and therefore do not involve degree semantics. They are interpreted using PREDICATE MODIFICATION between two sets of manners, a separate semantic object.

(14) John ***(*as)*** cooled the pie ***as*** he did the lasagna, # namely to 30 degrees / namely by leaving out on the window sill.

- This analysis cannot apply to Dutch. Verbal equatives are marked with *zo*, even though degree readings are impossible, e.g. in DAs (15)-(17).

(15) We hebben de pizza (net) zo afgekoeld als de lasagne
we have the pizza just so cooled.down as the lasagna
'We cooled down the pizza like the lasagna.'

(16) Namelijk door te blazen.
namely by to blow
'Namely by blowing.'

(17) #Namelijk tot 21 graden.
namely until 21 degrees
'Namely to 21 degrees.'

- Verbal equatives also exhibit scope ambiguity, demonstrated in (11)-(13), requiring quantificational semantics and not PREDICATE MODIFICATION.

PMs with ambiguity: German

- German is similar to Dutch; it uses a proform *so*, combined with the SM *wie*, to form equatives (Anderson and Morzycki 2015).

(18) Ich bin ***so*** groß
I am such tall
'I am this tall.'

(19) Ich bin ***so*** groß ***wie*** Peter.
I am such tall as Peter
'I am as tall as Peter.'

(20) ***so*** getanzt
such danced
'danced like that'

(21) John hat ***so*** ***wie*** Maria getanzt.
John has such WH Mary danced
'John danced the way Mary did.'

- Hohaus and Zimmermann (2021) show however that degree readings are possible with the relevant verbs, e.g., DAs exhibit ambiguity between manner and degree readings (22)-(24).
- This motivates their analysis where the PM *so* is type-neutral, quantifying over either degrees or manners.

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

(23) Nämlich durch Pusten.
namely through blow
'Namely through blowing on it.'

(24) Nämlich auf 21 grad
namely to 21 degrees
raumtemperatur.
room.temperature
'Namely to 21 degrees.'

References

Alrenga, P., Kennedy, C., and Merchant, J. (2012). A new standard of comparison. In Arnett, N. and Bennett, R., editors, *Proceedings of the 30th West Coast Conference on Formal Linguistics*, pages 32–42. Somerville, MA: Cascadilla Proceedings Project.
Anderson, C. and Morzycki, M. (2015). Degrees as kinds. *Natural Language & Linguistic Theory*, 33:791–828.
Bhatt, R. and Pancheva, R. (2004). Late merger of degree clauses. *Linguistic Inquiry*, 35(1):1–45.
Corver, N. (2018). The freezing points of the (Dutch) adjectival system. In Hartmann, J. et al., editors, *Freezing: Theoretical approaches and empirical domains*, pages 143–194. De Gruyter Mouton.
Haspelmath, M. and Buchholz, O. (1998). Equative and similative constructions in the languages of Europe. In van der Auwera, J. and Ó Baoill, D., editors, *Adverbial constructions in the languages of Europe*, pages 277–334. Berlin: Mouton de Gruyter.
Heim, I. (2000). Degree operators and scope. In Jackson, B. and Matthews, T., editors, *Proceedings of the 10th Semantics and Linguistic Theory conference*, pages 40–64. Ithaca: Cornell University.
Heim, I. (2006). Remarks on comparative clauses as generalized quantifiers. Ms., Massachusetts Institute of Technology.
Hohaus, V. and Zimmermann, M. (2021). Comparisons of equality with German *so...wie*, and the relationship between degrees and properties. *Journal of Semantics*, 38:95–143.
Rett, J. (2013). Similatives and the argument structure of verbs. *Natural Language & Linguistic Theory*, 31:1101–1137.
Wellwood, A. (2015). On the semantics of comparison across categories. *Linguistics & Philosophy*, 38:67–101.