Splitting Germanic Negative Indefinites

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Split Scope

(1) Je hoeft **geen** stropdas te dragen.
you must-NPI GEEN tie to wear
'You do not have to wear a tie.' $\neg > \Box > \exists$

(2) Henk mag **geen** toetje eten.
Henk may GEEN dessert eat
'Henk is not allowed to eat a dessert.' $\neg > \Diamond > \exists$

Aims

1. cross-linguistic variation in the availability of split scope with negative indefinites
2. no cross-linguistic variation in the availability of split scope with degree modifiers
3. split scope is constrained in the same way degree quantifier scope is constrained

$>$ in some (Germanic) languages, negative indefinites are degree expressions

1. Cross-linguistic differences

(3) The company need fire **no** employees.

'It is not the case that the co. is obligated to fire an employee.'

1. Cross-linguistic differences

(3) The company need fire **no** employees.

'It is not the case that the co. is obligated to fire an employee.'

(4) The company has to fire **no** employees.

'#It's not the case that the company has to fire an employee.'

(5) Zu dieser Feier musst du keine Krawatte anziehen
To this party must you no tie wear
'To this party you don't have to wear a tie.'

(6) At this party, you have to wear no tie.

2. No cross-linguistic differences for degree modifiers

(7) We mogen **maximaal twintig** minuten praten.
We may maximally twenty minutes talk.
'We are not allowed to speak for more than twenty minutes'

(8) Tom has to bring **at most two** blankets.
'Tom does not have to bring more than two blankets'

2. No cross-linguistic differences for degree modifiers

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(8) Tom has to bring **at most two** blankets.
'Tom does not have to bring more than two blankets'

Fully expected on the assumption that **at most two** is a degree quantifier that optionally QRs over the modal.

(Hackl 2000, Nouwen 2008, 2010, Kennedy 2015)

3. Split scope follows the Heim-Kennedy generalisation

Scope splitting only occurs over intensional operators, following the HKG.

HKG: *[$D_{dtt} \ldots Q_{ett} \ldots t_d$]

(9) Someone spoke for at most twenty minutes.

#'The longest time someone spoke for was twenty minutes'

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Scope splitting only occurs over intensional operators, following the HKG.

HKG: *[$D_{dtt} \ldots Q_{ett} \ldots t_d$]

(9) Someone spoke for at most twenty minutes.

#'The longest time someone spoke for was twenty minutes'

HKG applies even for negative indefinites (see also Abels & Marti 2010)

(10) Genau ein Arzt hat **kein** Auto.
exactly one doctor has KEIN car
#'It's not the case that exactly one doctor has a car'
'Exactly one doctor has no car'

4. Some negative ‘indefinites’ are degree operators

(11) Nigella heeft **geen** 20 taarten gebakken.
Nigella has GEEN 20 cakes baked.
‘Nigella has not baked 20 cakes.’

(12) Peter hat **keine** drei Kinder.
Peter has KEIN three children.
‘Peter does not have three children.’

(13) *Nigella baked **no** 20 cakes.

(14) *Fredrik är **ingen** två meter hög.
Fredrik is INGEN two meters high.
Intended: ‘Fredrik is not two meters tall.’

Generalisation

1. Crosslinguistic differences in split scope for negative indefinites
2. No crosslinguistic differences in split scope for degree quantifier
3. All split scope follows the HKG on degree quantifier scope
4. Some negative indefinites look like degree quantifiers

Generalisation

1. Crosslinguistic differences in split scope for negative indefinites
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Split scope generalisation for Germanic:
Whenever a negative 'indefinite' can modify numerals, it can split scope.

Generalisation

	split scope	modified numerals
English	limited	*no hundred
Swedish	limited	*ingen hundra
Danish	limited	*ingen hundrede
Norwegian	limited	*ingen hundre
Icelandic	unlimited	✓engir hundrað
Dutch	unlimited	✓geen honderd
German	unlimited	✓kein hundert
Frisian	unlimited	✓ gjin hûndert

We conclude that

- Scope splitting involves degree operators
- No is not a degree operator
- Negative 'indefinites' like kein/geen *are* degree operators

Analysis: the gist

- 'Split' scope is simply the effect of a degree quantifier taking wide scope
- Dutch geen / German kein are degree quantifiers
- They are also numeral modifiers
- The quantifier use is derived from the modifier use by incorporating numeral 1

Analysis: numeral negation

(15) Nigella heeft geen 20 taarten gebakken.
Nigella has GEEN 20 cakes baked.

Analysis: numeral negation

(15) Nigella heeft geen 20 taarten gebakken.
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Reading 1: It is not the case that Nigella baked 20 cakes.

Reading 2: She baked fewer than 20.

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$[\![\text{geen}_{=}]\!] = \lambda n.\lambda P.\neg max(P) = n$

$[\![\text{geen}_{\geqslant}]\!] = \lambda n.\lambda P.\neg P(n)$

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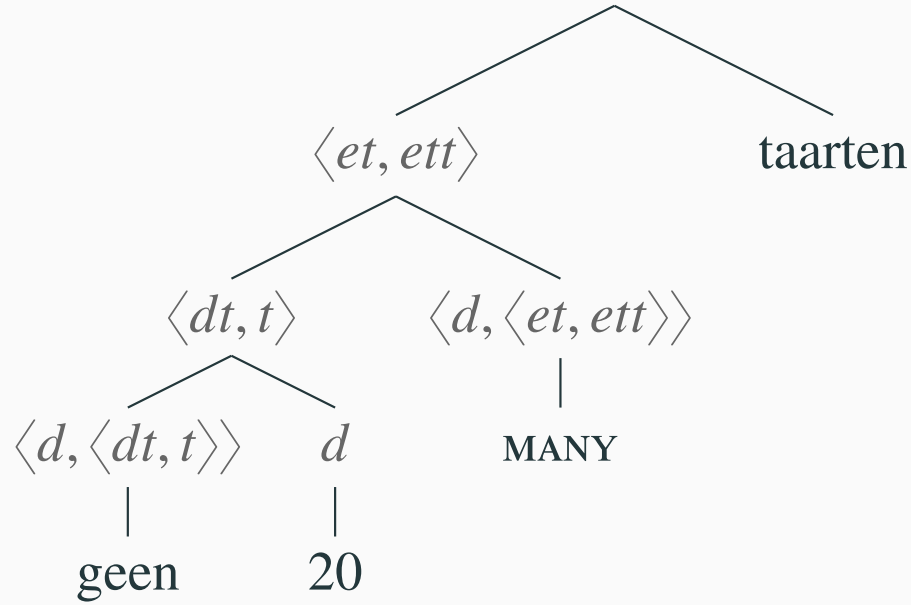

(Hackl 2000 and many following that)

Analysis: numeral negation

(16) Nigella heeft geen 20 taarten gebakken.
Nigella has GEEN 20 cakes baked.

Reading 1: It is not the case that Nigella baked 20 cakes.

Analysis: numeral negation

(16) Nigella heeft geen 20 taarten gebakken.
Nigella has GEEN 20 cakes baked.

Reading 1: It is not the case that Nigella baked 20 cakes.

$$[\![\text{geen}_{=}20]\!](\lambda n.\exists x[{}^{*}bake(N,x)\ \&\ {}^{*}cake(x)\ \&\ \#x = n])$$

$$= \neg max(\lambda n.\exists x[{}^{*}bake(N,x)\ \&\ {}^{*}cake(x)\ \&\ \#x = n]) = 20$$

the number of cakes Nigella baked is not 20

Analysis: numeral negation

(17) Nigella heeft geen 20 taarten gebakken.
Nigella has GEEN 20 cakes baked.

Reading 2: Nigella baked fewer than 20 cakes.

Analysis: numeral negation

(17) Nigella heeft geen 20 taarten gebakken.
Nigella has GEEN 20 cakes baked.

Reading 2: Nigella baked fewer than 20 cakes.

$$[\![\text{geen}_{\geqslant}20]\!](\lambda n.\exists x[{}^{*}bake(N,x)\ \&\ {}^{*}cake(x)\ \&\ \#x = n])$$

$$= \neg\exists x[{}^{*}bake(N,x)\ \&\ {}^{*}cake(x)\ \&\ \#x = 20])$$

= Nigella baked fewer than 20 cakes

Analysis: split scope with numeral negation

(18) Nigella hoeft geen 20 taarten te bakken.
Nigella needs GEEN 20 cakes to bake.

Reading 1: the minimum number of cakes Nigella needs to bake is not 20 ($\text{geen}_{=}$)

$$\neg max(\lambda n.\Box\exists x[{}^{*}bake(N,x) \;\&\; {}^{*}cake(x) \;\&\; \#x = n]) = 20$$

Reading 2: the minimum number of cakes Nigella needs to bake is lower than 20 ($\text{geen}_{\geqslant}$)

$$\neg\Box\exists x[{}^{*}bake(N,x) \;\&\; {}^{*}cake(x) \;\&\; \#x = 20]$$

Analysis: bare numeral negation

(19) Jan hoeft geen stropdas te dragen.
Jan need GEEN tie to wear.

Analysis: bare numeral negation

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Jan need GEEN tie to wear.

We assume that bare geen has incorporated the numeral one (Dutch: één).

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We assume that bare geen has incorporated the numeral one (Dutch: één).

$$[\![geen^{1}_{\geqslant}]\!] = \lambda P.\neg P(1)$$

$$[\![geen^{1}_{\geqslant}]\!](\lambda n.\Box\exists x[^{*}wear(j,x) \;\&\; ^{*}tie(x) \;\&\#x = n])$$

$$= \neg\Box\exists[^{*}wear(j,x) \;\&\; ^{*}tie(x) \;\&\; \#x = 1]$$

Analysis: bare numeral negation

What about geen$^{1}_{=}$?

Analysis: bare numeral negation

What about $\text{geen}^{1}_{=}$?

(20) Jan heeft $\text{geen}^{1}_{=}$ hond.
Jan has GEEN dog.

predicted to mean that Jan either has no dog or he has more than one dog

This is not attested

Analysis: bare numeral negation

Why geen$^{1}_{=}$ is not lexicalised

- geen$^{1}_{=}$ would express a discontinuous scalar meaning
- geen$^{1}_{=}$ is true of [0,0]
- geen$^{1}_{=}$ is true of [0,2]
- geen$^{1}_{=}$ is false of [0,1]
- geen$^{1}_{=}$ is thus not a *connected* meaning in the sense of Chemla 2017
- as such it has a disadvantage on a lexicalisation path

Analysis: bare numeral negation

The discontinuous meaning *is* available for non-incorporated geen + numeral one.

(21) Ze heeft geen één boek gelezen, maar twee.
She has GEEN one book read, but two.

Analysis: bare numeral negation

The discontinuous meaning *is* available for non-incorporated geen + numeral one.

(21) Ze heeft geen één boek gelezen, maar twee.
She has GEEN one book read, but two.

And already absent when geen and numeral form prosodic unit:

(22) Ze heeft geen-één boek gelezen, #maar twee.
She has GEEN-one book read, but two.

Conclusion

- Germanic indefinites only show split scope if they double as degree negation
- English no is not a degree operator
- Dutch geen / German kein are; they are not negative indefinites
- Split scope is simply the effect of a degree quantifier taking wide scope

Extensions (see paper)

- Degree or focus operator?: only focus-sensitive negative indefinites split scope

- (23) /JEDER Arzt hat KEIN\ Auto
  every doctor has no car
  'Not every doctor has a car'

  violations of the Heim-Kennedy generalisation

- (24) Nigella heeft geen soep gemaakt.
  Nigella has no soup made.
  'Nigella didn't make soup'

  non-count cases

- (25) The company need fire no employees

  English split scope