Splitting Germanic Negative Indefinites

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(1) Je hoeft geen stropdas te dragen.  
You must not wear a tie.  
‘You do not have to wear a tie.’  

(2) Henk mag geen toetje eten.  
Henk may not eat a dessert.  
‘Henk is not allowed to eat a dessert.’
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
(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’
(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’

Fully expected on the assumption that **at most two** is a degree quantifier that optionally QRs over the modal.
3. Split scope follows the Heim-Kennedy generalisation

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

**HKG:** $*\left[D_{dt} \ldots Q_{et} \ldots t_{d}\right]$  

(9) Someone spoke for at most twenty minutes.  

#‘The longest time someone spoke for was twenty minutes’
3. Split scope follows the Heim-Kennedy generalisation

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

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

(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 GEE N 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.’
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
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

**Split scope generalisation for Germanic:**
*Whenever a negative ‘indefinite’ can modify numerals, it can split scope.*
## Generalisation

<table>
<thead>
<tr>
<th>Language</th>
<th>Split Scope</th>
<th>Modified Numerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>limited</td>
<td>*no hundred</td>
</tr>
<tr>
<td>Swedish</td>
<td>limited</td>
<td>*ingen hundra</td>
</tr>
<tr>
<td>Danish</td>
<td>limited</td>
<td>*ingen hundrede</td>
</tr>
<tr>
<td>Norwegian</td>
<td>limited</td>
<td>*ingen hundre</td>
</tr>
<tr>
<td>Icelandic</td>
<td>unlimited</td>
<td>✓ engir hundrað</td>
</tr>
<tr>
<td>Dutch</td>
<td>unlimited</td>
<td>✓ geen honderd</td>
</tr>
<tr>
<td>German</td>
<td>unlimited</td>
<td>✓ kein hundert</td>
</tr>
<tr>
<td>Frisian</td>
<td>unlimited</td>
<td>✓ gjin hûndert</td>
</tr>
</tbody>
</table>
We conclude that

- Scope splitting involves degree operators
- **No** is not a degree operator
- Negative ’indefinites’ like **kein/geen** are degree operators
• ‘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
(15) Nigella heeft geen 20 taarten gebakken.
Nigella has **geen** 20 cakes baked.
(15) Nigella heeft geen 20 taarten gebakken.

Nigella has **geen** 20 cakes baked.

Reading 1: It is not the case that Nigella baked 20 cakes.
Reading 2: She baked fewer than 20.
Analysis: numeral negation

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Reading 2: She baked fewer than 20.

\[
\begin{align*}
\llbracket \text{geen}_\leq \rrbracket &= \lambda n. \lambda P. \neg \text{max}(P) = n \\
\llbracket \text{geen}_> \rrbracket &= \lambda n. \lambda P. \neg P(n)
\end{align*}
\]
Analysis: numeral negation

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

Reading 1: It is not the case that Nigella baked 20 cakes.
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\[
\llbracket \text{geen} \rrbracket = \lambda n. \lambda P. \neg \text{max}(P) = n
\]
\[
\llbracket \text{geen}_> \rrbracket = \lambda n. \lambda P. \neg P(n)
\]

(Hackl 2000 and many following that)
(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.
(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.

\[
\llbracket \text{geen } 20 \rrbracket (\lambda n. \exists x [\text{*bake}(N, x) \& \text{*cake}(x) \& \#x = n])
\]

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

the number of cakes Nigella baked is not 20
(17) Nigella heeft geen 20 taarten gebakken.
Nigella has **geen** 20 cakes baked.

Reading 2: Nigella baked fewer than 20 cakes.
(17) Nigella heeft geen 20 taarten gebakken.
Nigella has \( \text{GEEN} \) 20 cakes baked.

Reading 2: Nigella baked fewer than 20 cakes.

\[
\llbracket \text{geen} \geq 20 \rrbracket (\lambda n. \exists x[*bake(N, x) \& *cake(x) \& \#x = n])
= \neg \exists x[*bake(N, x) \& *cake(x) \& \#x = 20])
= \text{Nigella baked fewer than 20 cakes}
\]
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 (geen$_{=}$)

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

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

\[ \neg \Box \exists x[\text{*bake}(N, x) \& \text{*cake}(x) \& \#x = 20] \]
Analysis: bare numeral negation

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

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

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

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

\[
\llbracket \text{geen}^1 \rrbracket = \lambda P. \neg P(1)
\]

\[
\llbracket \text{geen}^1 \rrbracket (\lambda n. \square \exists x [*\text{wear}(j, x) \& *\text{tie}(x) \& \#x = n])
\]

\[
= \neg \square \exists [*\text{wear}^1(j, x) \& *\text{tie}(x) \& \#x = 1]
\]
Analysis: bare numeral negation

What about geen₁?
Analysis: bare numeral negation

What about geen$_{\equiv}$?

(20) Jan heeft geen$_{\equiv}$ 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
Why geen\textsubscript{1} is not lexicalised

- geen\textsubscript{1} would express a discontinuous scalar meaning
- geen\textsubscript{1} is true of [0,0]
- geen\textsubscript{1} is true of [0,2]
- geen\textsubscript{1} is false of [0,1]
- geen\textsubscript{1} is thus not a connected meaning in the sense of Chemla 2017
- as such it has a disadvantage on a lexicalisation path
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.
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.
• 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’

(24) Nigella heeft geen soep gemaakt.
• Nigella has no soup made.
‘Nigella didn’t make soup’

• (25) The company need fire no employees

violations of the Heim-Kennedy generalisation

non-count cases

English split scope