The gradual loss of NPI-hood with ‘need’ verbs in Germanic

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Overview I

The spectrum of ‘need’ verb uses in Germanic
- Old High German
- Middle High German
- Modern German
- English
- Dutch
- Old Saxon
- Danish
- Norwegian
- Swedish
- Icelandic
- Gothic

Summary
NPI vs. distributionally unrestricted ‘need’ verb uses in Germanic

Finnish *tarvita*

Licensing conditions of NPIs in Germanic language
Overview II

The structuring individual uses as complex lexical dependencies

The acquisition of ‘need’ verbs and modal flavours

Analysis
  Uses
  Modelling Acquisition of ‘need’ verbs

Summary
Aims

- Model linguistic representations of lexical polysemy in a way that is
  - in line with data from L1 acquisition
  - in line with the historical development
  - can account for the existence of *phantom use spectra*

- account for the anomalous behaviour of ‘need’ verbs in Germanic languages and neighbouring

- account for the distribution of negative polar uses and their individual licensing conditions
1. Why did the etymologically unrelated ‘need’ verbs need (English), hoeven (Dutch), brauchen (German) and trenger (Norwegian/Norsk) and the related behøve in Mainland Scandinavian all develop morphosyntactic and/or semantic anomalies?

2. How come all of these verbs developed independantly epistemic interpretations?

3. Why are all of them (partially) NPIs?

4. Why are the epistemic uses in each of the languages NPIs?

5. Why is it that if the use of a ‘need’ verb is an NPI all the forms which grammaticalised from that form are NPIs too?
How to account for the principled variation among Germanic ‘need’ verbs? I

1. Germanic ‘need’ verbs have a common ancestor: Protogermanic *ₚuᵊᵚₐn

   - Middle High German durfen ‘need’ – turren ‘dare’
   - Middle English tharf ‘need’ – dare (cf. Visser 1969, S. 1423–1424)

3. The phonetic form disappeared, the remaining feature specifications remained intact, filled with new phonetic content
4. A specific spectrum of lexical uses can emancipate from its phonological form (phantom use spectrum)
5. Two scenarios for the grammaticalisation of epistemic forms
   ▶ they grammaticalised independently in each language
   ▶ there was already an epistemic ‘need’ verb *purban in Protogermanic
The spectrum of ‘need’ verb uses in Germanic

- Old High German
- Middle High German
- Modern German
- Old English
- Modern English
- Old Saxon
- Dutch
- Danish
- Norwegian (Bokmål/Norsk)
- Swedish
- Icelandic
Consulted corpora

- Deutsches Textarchiv
- Referenzkorpus Altdeutsch
- Referenzkorpus Mittelhochdeutsch
- Nordic Dialect Corpus and Syntax Database
- Wulfila Project
### Attested in 4 syntactic patterns

1. (?) idiomatic intransitive pattern
2. with NP\textsubscript{gen}
3. with verbless directional Phrase
4. with bare infinitive in circumstantial interpretation (almost all with animate subject referent)

### But only in NPI licensing contexts (negation, interrogatives)

1. in the scope of a clause mate negation
2. in the scope of negation in a superordinate clause
3. in interrogatives
(1) ‘Whoever among you wants to be baptised, I can baptise him and also I will not deny him of the ripples of water. You will not leave empty-handed, the man is among you in order to show with his words what these acts mean.’
(2) In múat in iz ni lázen, ouh in soul them.DAT it.ACC NEG let-SBJV.PRS.3P also wíht inan ni ríazen; ni thúrfun thing him.ACC NEG beweep-SBJV.PRS.3P NEG need.3S sie in war mín, er sprichit scíoro mit they in truth my he speak-PRS.3S soon with in.² them.M.DAT.P

(Angel talking to Maria Magdalena after she found empty grave)‘They (disciples) should not allow it (disappearance of Christ’s body) to affect their souls, they should not beweep him, they are truly not suffering any wont, he will soon talk to them.’

▶ Either with the adverbials in war ‘truly’ or bi thíu ‘therefore’

▶ Idiomatic use?

²DDD-AD-Otfrid_1.1 > O_Otfr.Ev.5.4 (edition 640 - 682).
Then the most honorable of the priests tore his coat speaking and taunted: What need we yet now witnesses?

3DDD-AD-Tatian_1.1 > T_Tat191 (edition 1–41)
Tház kind ouh thaz
DEMN.?NOM.S child though DEM.N?NOM.S
wurti fon gómmannes gibúrti; bi
develop;SBJV.PST from husband-gen procreation by
thíu ni drafun thárasun thiu thíarna noh ther
this NEG need;PST.3P there.to the girl-NOM nor the
íra sun.4
her son-NOM
‘The child grew from the procreation of the husband. For that
reason, neither the young woman nor her sun need come
there.’

4DDD-AD-Otfrid_1.1 > O_Otfr.Ev.1.14 (edition 161 - 181)
OHG *thurfan* with bare infinitive (circumstantial)

- With infinitive that refers to an unwelcome sensation of the subject referent
Modern German *brauchen*

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<tr>
<th></th>
<th>intr.</th>
<th>NP_{acc/gen}</th>
<th>impers.</th>
<th>fin. clause</th>
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<th>zu/bare inf. circ.</th>
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▶ Attested with 6 syntactic patterns

1. with NP_{acc/gen}
2. impersonal
3. with verbless directional Phrase (NPI only)
4. with bare infinitive in circ. interpretation (NPI only, majority all with animate subject referent)
5. with bare infinitive in epist. interpretation (NPI only, majority all with animate subject referent)

▶ Exhibits morpho-syntactic anomalies

1. *infinitivus pro participio*/*Ersatzinfinitiv* (SE German varieties)
2. lack of 3S.IND.PRS -s in NW German varieties
3. fronted vowel in SBJV.PST stem
**brauchen with NP complements**

Transitive uses (5), impersonal uses (6):

(5) Du weist / daß ich ein Haus und you know that I a house and apartment Wohnung brauche.need

(6) Daß ihm der Schad nicht komme/ braucht that him the harm NEG come-SBJV.PRS need es mehr Betens/ daß ihn Gott EXPL more pray-INF.NMLZ-GEN it God turn abwenden wolle.want-SBJV.PRS

‘In order to prevent the harm from affecting him, more prayers are needed, such that God may turn it away.’


(7) Ich brauche nicht, dass meine Fingerabdrücke irgendwo abgespeichert sind, […]

‘I do not need that my fingerprints are recorded.’
(8) Das Fahrrad braucht nicht zum TÜV.

The bicycle needn’t be approved by the Technical Inspection Authority.
*brauchen* with non-finite clausal complements (NPI)

*zu*-Infinitives with circumstantial modality, initially only with animate subject referents (9)

(9) Man braucht nicht weit zu sehn, viel Jammer und Gefahr.⁹

peril

‘One needn’t look far, much misery and peril.’

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Bare infinitives with circumstantial modality (10)

(10) Wandern braucht ihr nicht zum Süden, weil ihn ihr Gesang euch bringt.

‘You needn’t wander to the South, as her song will bring it to you.’

**brauchen** with epistemic non-finite clausal complements (NPI)

zu-infinitives with epistemic modality (11)

(11) es braucht aber im Innern nicht grade it need yet in the inside NEG just Magneteisenstein sich zu befinden, der eine magnetic.iron.ore REF to be-INF REF a Dichtigkeit von 4,5 hat, noch selbst Granat von 2,3 densitiy of 4,5 has nor even garnet from 2,3 bis 2,5, es können auch komprimierte Flüssigkeiten to 2,5 it could also compressed liquids oder Luft sein.¹¹ or air be-INF

‘The inside needn’t consist of magnetic iron ore, which has a density of 4.5, nor garnet with 2.3 to 2.5, it could be compressed liquids or air, as well.’

brauchen with epistemic non-finite clausal complements (NPI)

Examples from DECOW14:

(12) Deshalb braucht das Schiff nicht aus Neustadt sein, therefore need the ship NEG from Neustadt be-INF weil hin und wieder auch fertige Schiffe von der as once and again too completed ships by the Krone aufgekauft worden sind, z.B. von crown buy PASS.AUX PRF.AUX e.g by Kaufleuten.12 traders

‘That is why the ship needn’t be built in Neustadt, as every now and then the crown also bought ships that had been already completed.’

brauchen with epistemic non-finite clausal complements (NPI)

Examples from DECOW14:

(13) Als Diakon erscheint zuerst Kaspar Wagen. Er braucht aber nicht der erste gewesen sein, da er sicher mit dem Jasperus Wagenius, der 1544 als Prädikant an der Kapelle zu Schlichting in Norderdithmarschen unterzeichnet, identisch ist. ‘It is Kaspar Wagen who is mentioned as first deacon. But he needn’t have been the first one, as he is certainly identical to Jasperus Wagenius, who signed 1544 as predicant at the chapel in Schlichting in Norderdithmarschen.’
Examples from DECOW14:


‘Of course, the two of them needn’t have the same father. Yet I assume, as two features are identical, they must have inherited them from the mother.’
brauchen – morphosyntactic anomalies: IPP

(15) dem Soldaten hätt’ ich nicht einmal the-DAT soldier have-SBJV.PST I NEG PRT brauchen einen Schlaftrunk zu geben, er need-IPP a sleeping.draught to give-INF he wär’ doch nicht aufgewacht.  

‘I wasn’t even necessary to sedate the soldier with a sleeping draught, he wouldn’t wake up at all.’

(16) * dem Soldaten hätte ich nicht einmal the-DAT soldier have-SBJV.PST I NEG PRT einen Schlaftrunk zu geben gebraucht. a sleeping.draught to give-INF need-PPP

Irregular subjunctive of the past (17); loss of 3S.PRS.IND (18) cf. Girnth 2000, S. 122–136)

(17) aber wenn ich dich schon genung kente; but if I you already enough know; SBJV.PST so bräucht ich dich ja nicht zu suchen.

‘but if I knew you already well enough, so I needn’t look for you.’

(18) Sie brauch-Ø keine Angst zu haben. she need.3s no fear to have-INF

Modern English *need* + bare infinitive and *need* with *to*-infinitive

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<th>to/bare inf. epist</th>
<th>TOTAL</th>
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At least from early 19\textsuperscript{th} century two distinct forms (cf. F. Müller 2008, S. 76–80)

1. a NPI with bare infinitive reminiscent of German
   1.1 with bare infinitive in circ. interpretation (NPI only, majority all with animate subject referent)
   1.2 with bare infinitive in epist. interpretation (NPI only, majority all with animate subject referent)
   1.3 exhibiting morphosyntactic anomalies
      1.3.1 NICE properties
      1.3.2 lack of 3S.IND.PRS -s
      1.3.3 lack of past stem
Modern English *need* + bare infinitive and *need* with *to*-infinitive II

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<th>to/bare inf. epist</th>
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<td><em>need</em> + <em>to</em>-Inf.</td>
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At least from early 19<sup>th</sup> century two distinct forms (cf. F. Müller 2008, S. 76–80)

2. a form with *to*-infinitives predominantly found in affirmative contexts
   2.1 with NP<sub>acc</sub>
   2.2 with *to*-infinitives
*need* transitive and impersonal

(19) þanne ne þarf us noðer gramien ne shamien.¹⁷
then NEG need us neither grieve-INF nor shame-INF
‘In that case, we needn’t grieve or be ashamed.’

¹⁷Trin. Coll. Hom. 69, 1200 as cited in *OED* online.
Circumstantial modal with *to*-infinitives (20), with bare infinitives (21)

(20) Be ye togeder as brethrn both! No man

be.IMP you.PL together as brothers both no man

ye nedith to drede.\(^{18}\)

you.PL need to fear-INF

(21) If wyt myght haue me saued, I neded not

if reason might have me saved I needed NEG

fere.\(^{19}\)

fear-INF

‘If reason could have saved me, there was no need to

be afraid.’

\(^{18}\)Sowdone, Bab, 3216, 1400, cited as in OED online.

Epistemic uses:
(22) He may be there, but he needn’t be.\(^{20}\)
(23) He needn’t have done it deliberately.\(^{21}\)

\(^{20}\) As cited in Palmer (1990, S. 61).
\(^{21}\) As cited in Huddleston und Pullum (2002, S. 180)
A second type of uses with infinitives has developed: to-infinitives, no longer restricted to NPI environment:

(24) I need *(to) get some fresh air.\textsuperscript{22}

\textsuperscript{22}As cited in Duffley (1994, S. 225)
Loss of 3S.PRS.IND (25); Loss of PST in English (26) cf. Poutsma (1926, S. 408–409):

(25) An unpolished man need-∅ not be an ill mannered one.  

(26) He told me that I need-∅ not make myself at all uneasy about his daughter’s unhappiness

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23 Charles Dickens, The personal history of Copperfield, Ch XXXVIII 276 a, as cited in Poutsma (1926, S. 408–409).
*need* – morphosyntactic anomalies: primary verb negation and subject-auxiliary inversion

Huddleston und Pullum (2002, S. 93, 110), Bolinger (1942): only a small set of auxiliaries exhibit the NICE properties (negation, inversion, code, emphasis)

(27) He *needn’t* tell her
(28) Need he tell her?

- *need* with bare infinitive takes primary verb negation rather than *do*-support
- *need* with bare infinitive undergoes subject-auxiliary inversion rather than *do*-support
Data from *Referenzkorpus Altdeutsch*

<table>
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<td>non-veridical</td>
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- Attested in a single syntactic pattern, always NPI
  - with bare infinitive in circumstantial interpretation (almost all with animate subject referent)
Than scalt thu eft uuord sprekan, hebbean then shall you again word speak-INF raise-INF thînaro stemna giuuald; ni tharft thu stum your-GEN.S voice-GEN power NEG need you mute uuesan lengron huîla.²⁴ be-INF long time
‘Then you will speak words again, rising your voice’s power, you need not keep silent anylonger.’
thurðan with bare infinitive (circumstantial)

(30) Bethiu ne thurðon gi umbi
for.that NEG need-2.SBJV.PRS.P 2.NOM.P about
iuuua geuuâdi sorgon, ne gornot
2.GEN.P cloth-ACC worry-INF NEG lament-IMP.P
gi umbi iuuua gegariuui te
2.NOM.P about 2.GEN.P-ACC garment-ACC too
suumðo: god uuili is alles rådan,
much god wants 3.N.GEN.S all-N.GEN.S provide-INF
helpan fan heðenes uuilange, ef gi
help-INF from heaven-GEN.S field-DAT.S if 2.NOM.P
uuiiliad aftar is huldi theonon.25
want after 3.M.GEN.S.ACC favour serve-INF
‘For that reason, you needn’t worry about your cloth, don’t
lament your garments too much, God will provide for it and
help you with the heaven’s power if you are ready to serve
his will.’

25 DDD-AD-Heliand_1.1 > Hel_19 (edition 872–942).
Attested in 5 syntactic patterns, all of them NPI

1. with NP_{acc}
2. impers
3. with verbless directional Phrase
4. with *te* infinitive in circumstantial interpretation (almost all with animate subject referent)
5. with *te* infinitive in epistemic interpretation (almost all with animate subject referent)

Exhibiting morpho-syntactic anomalies

1. IPP

Diverse NPI licensing contexts

1. in the scope of a clause mate/superordinate negation
2. in interrogatives
3. in comparatives, equatives
Dutch *hoeven* with NP complements (NPI)

As transitive verb (31)

(31) Ik hoef *(geen)* applesap.\(^{26}\)
    I need no apple.juice

\(^{26}\)As cited in van der Wouden (2001, S. 206)
Dutch *hoeven* with verbless clausal complements (NPI)

With verbless clausal complements (32):

(32) Morgen *hoeven we *(niet) naar school.*

‘Tomorrow, we needn’t go to school.’

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27 As cited in van der Wouden (2001, S. 206)
Dutch *hoeven* with infinitive complements

Acceptable only with *te*-infinitives:

(33) Jan hoeft niet te komen.\(^{28}\)
    John need NEG to come

(34) * Jan hoeft niet komen.\(^{29}\)
    John need NEG come

\(^{28}\)As cited in van der Wouden (2001, S. 206)
\(^{29}\)As cited in van der Wouden (2001, S. 206)
Acceptable only with *te*-infinitives (cf. Barbiers 1995, S. 145):

(35) Jan hoeft die moord niet gepleegd te hebben.\(^{30}\)
Jan need DET murder NEG commit-PPP to have-INF
‘Jan needn’t have committed the murder.’ (Dutch)

Dutch *hoeven* – morphosyntactic anomalies: IPP

Mandatory IPP, drop of infinitive particle *te* (cf. van der Wouden 2001, S. 206):

(36)  

a. Jan had niet *hoeven* komen.\(^{31}\)  
Jan has NEG need-IPP come-INF  
‘Jan didn’t have to come.’

b. * Jan had niet *gehoeft* te komen.\(^{32}\)  
Jan has NEG need-PPP to come-INF

\(^{31}\) As cited in van der Wouden (2001, S. 206).
Data from *Nordic Dialect Corpus*:

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<td>(✓)</td>
<td>15</td>
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- Attested in three syntactic patterns
  1. with NP_{acc} (in *NDC* only in non-veridical environments, but acceptable as distributionally unrestricted)
  2. with *att* and bare infinitive in circumstantial interpretation
  3. with *att* and bare infinitive in epistemic interpretation (no occurrences in the *NDC*, only mentioned in Davidsen-Nielsen 1990, S. 36, 82)

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^{33} Numbers reflect the frequencies in the *NDC*, the symbol (✓) indicates that uses are not attested in the *NDC* but they are reported in grammars, literature or other corpora.
Danish *behøve* with NP complements:

Transitive uses:

(37) vi behøve Religion, naar vi skulle gaae we need religion if we should go-INF
Døden i Møde. dead-DEF and encounter

‘We need the religion in contemplation of death’
Transl. Bjarne Ørsnes

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34 C. Bastholm (1740-1819). Sørge-Tale ove r Arve-Prindsesse Sophie Friderikke. 1795, p. 16, as cited in ODS.
Since 18\textsuperscript{th} century attested with \textit{at}-infinitives (38) and later with bare infinitives (39):

\begin{itemize}
  \item[(38)] Det behøver I ikke at frygte for.\textsuperscript{35}
  \begin{flushleft}
    \textsc{Det} need \textsc{you} \textsc{NEG} to fear-\textsc{INF} of
  \end{flushleft}
  ‘You (PL) needn’t be afraid of that.’ Transl. by B. Ørsnes.
  
  \item[(39)] slig Ganger ei behøver Kræfter sanke.\textsuperscript{36}
  \begin{flushleft}
    \textsc{such horse} \textsc{NEG} need \textsc{strength-PL} collect-\textsc{INF}
  \end{flushleft}
  ‘Such a horse needn’t rest.’ Transl. by B. Ørsnes.
\end{itemize}

\textsuperscript{35}J. L. Heiberg (1791-1860) Poetiske Skrifter. I. 1862. S. 230, as cited in \textit{ODS}

\textsuperscript{36}Adam Oehlenschläger (1779-1850), as cited in ODS Supplement
Danish *behøve* with epistemic clausal complements (NPI)

(40) Behøver dette overhovedet (at) være sandt?‘Need this be true at all?’

(41) Boris behøver ikke have begået denne
Boris need **NEG** have-INF commit-PPP the
forbrydelse.‘Boris needn’t have committed the crime.’

---

38 As cited in Davidsen-Nielsen (1990, S. 82).
### Modern Norwegian *trenge*/behøve

**Data from the *Nordic Dialect Corpus*:³⁹**

<table>
<thead>
<tr>
<th></th>
<th>intr.</th>
<th>NP&lt;sub&gt;acc&lt;/sub&gt;</th>
<th>impers.</th>
<th>fin. clause</th>
<th>dir. PP</th>
<th>inf. circ.</th>
<th>inf. epist</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>behøve</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>veridical.</td>
<td>–</td>
<td>3</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>2 å-inf/1 0-inf</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>non-veridical</td>
<td>–</td>
<td>8</td>
<td>–</td>
<td>–</td>
<td>3</td>
<td>25 å-inf/27 0-inf</td>
<td>✓</td>
<td>63</td>
</tr>
<tr>
<td><strong>trenge</strong></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>veridical.</td>
<td>–</td>
<td>162</td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>9 å-inf/1 0-inf</td>
<td></td>
<td>173</td>
</tr>
<tr>
<td>non-veridical</td>
<td>–</td>
<td>82</td>
<td>–</td>
<td>–</td>
<td>2</td>
<td>74 å-inf/49 0-inf</td>
<td>✓</td>
<td>205</td>
</tr>
</tbody>
</table>

- Attested in four syntactic patterns
  1. with NP<sub>acc</sub>
  2. with verbless directional Phrase
  3. with å and bare infinitive in circumstantial interpretation
  4. with å and bare infinitive in epistemic interpretation (not attested in the *NDC*, only in Eide 2005, S. 77–79)

- patterns with clausal arguments predominantly in non-veridical environments, but not exclusively

---
³⁹Numbers reflect the frequencies in the *NDC*, the symbol (✓) indicates that uses are not attested in the *NDC* but they are reported in grammars, literature or other corpora.
Norwegian *trenger* with verbless clausal complements. (NPI)

(42)  Trenger ikke ut hver dag.\(^{40}\)
need   NEG out each day
‘(I) don’t need to go out each day.’

\(^{40}\)https://www.adressa.no/nyheter/trondheim/article1293848.ece, example provided by Eide (pers. comm.)
Norwegian *trenger/behøver* with epistemic non-finite clausal complements (NPI)

Only as NPI, particle å is optional:

(43) Jon trenger/behøver ikke (å) være morderen.\(^{41}\)

Jon need NEG to be-INF murder-DET

‘Jon needn’t be the murderer.’ (Norwegian)

---

\(^{41}\) As cited in Eide (2005, S. 77–79)
Modern Swedish behöva

Data from the *Nordic Dialect Corpus*:\(^{42}\)

<table>
<thead>
<tr>
<th>intr.</th>
<th>NP(_{acc})</th>
<th>impers.</th>
<th>fin. clause</th>
<th>dir. PP</th>
<th>bare inf. circ.</th>
<th>bare inf. epist</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>veridical</td>
<td>–</td>
<td>21</td>
<td>–</td>
<td>–</td>
<td>20</td>
<td></td>
<td>41</td>
</tr>
<tr>
<td>non-veridical</td>
<td>–</td>
<td>34</td>
<td>–</td>
<td>–</td>
<td>66</td>
<td>(✓)</td>
<td>100</td>
</tr>
</tbody>
</table>

▶ Attested in two syntactic patterns

1. with NP\(_{acc}\) (mostly NPI-like)
2. with bare infinitive in circumstantial interpretation (mostly NPI-like)
3. with bare infinitive in circumstantial interpretation (only in Teleman, Hellberg und Andersson 1999, S. 290–291)

\(^{42}\)Numbers reflect the frequencies in the *NDC*, the symbol (✓) indicates that uses are not attested in the *NDC* but they are reported in grammars, literature or other corpora.
From 16\textsuperscript{th} century without negation:

(44) Herren behöffuer them (dvs. åsninnan o. hennes sir-\textsc{det} need them ie donkey-\textsc{det} and his fåle).\textsuperscript{43} foa,

‘Our Sir needs them, that is the donkey an its foal.’

Transl. E. Engdahl.

\textsuperscript{43}Thet nyia testamentit på swensko. Stockholm, 1526, Mat. 21: 3, cited as in SAOB.
Swedish *behöva* with NP complements

From 16\textsuperscript{th} century without negation:

(45) Jagh troor at Gudh .. besörier migh .. medh I believe that God provides me with klädhe .. och födho och alt thet iagh til timeligh clothes and food and all that I to earthly näring behöffuer.\(^{44}\) nourishment need

‘I believe that God provides me with clothes and food and everything I need for nourishment on earth.’

Transl. E. Engdahl.

\(^{44}\)Catechismus eller christeligh kennedom för vngt och eenfaldigt folck ganska nyttigh. Item een liten bönebook. Stockholm, 1572. Kat. 1572, B 1 b. as cited in SAOB.
Swedish *behöva* with non-finite clausal complements

From 16\(^{th}\) century attested with *ath*-infinitives and bare infinitives without negation (46):

(46) Ath the (dvs. de hedningkristna) intit sådant COMP they ie the pagan nothing such (dvs. den judiska lagen) behöffua ath holla.\(^{45}\) ie the Jewish law need to keep ‘That they needn’t keep such.’ Transl. E. Engdahl

(47) Det som .. behöfde att repareras\(^{46}\) the REL need-PST to repair-INF-PASS ‘The one which had to be fixed.’ Transl. E. Engdahl

\(^{45}\) *Thet nyia testamentit på swensko*. Stockholm, 1526. Apg. 21: 25, cited as in *SAOB*.

Swedish *behöva* with non-finite clausal complements

In present day Swedish only with bare infinitives (cf. Teleman, Hellberg und Andersson (1999, S. 290–291)):

(48) Det *behöver* regna snart för att inte *grönsakerna* ska torka bort.

‘It must rain soon in order to prevent the vegetables from withering.’

*behöver* with bare infinitives in the *Nordic Dialect Corpus*:
66 in non-veridical/20 in affirmative contexts

---

Swedish *behöva* with epistemic non-finite clausal complements (NPI)

With epistemic interpretation only as NPI (cf. Teleman, Hellberg und Andersson 1999).

(49) Det behöver inte ha regnat där i går.

'It needn’t have rained there yesterday.'
### Modern Icelandic *purfa*

Data from the *Nordic Dialect Corpus*:\(^{49}\)

<table>
<thead>
<tr>
<th></th>
<th>intr.</th>
<th>(\text{NP}_{\text{gen}})</th>
<th>impers.</th>
<th>fin. clause</th>
<th>dir. PP</th>
<th>(\text{að-inf. inf. circ.})</th>
<th>(\text{að-inf. epist})</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>veridical</td>
<td>–</td>
<td>12</td>
<td>–</td>
<td>–</td>
<td>(✓)</td>
<td>125</td>
<td>–</td>
<td>137</td>
</tr>
<tr>
<td>non-veridical</td>
<td>11</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>(✓)</td>
<td>74</td>
<td>(✓)</td>
<td>85</td>
</tr>
</tbody>
</table>

- Attested in syntactic patterns
  1. with \(\text{NP}_{\text{acc}}\)
  2. with verbless directional Phrase
  3. with \(\text{að-inf.}\) infinitive in circumstantial interpretation
  4. with \(\text{að-inf.}\) infinitive in epistemic interpretation

- But only in NPI licensing contexts (negation, interrogatives)
  1. in the scope of a clause mate negation
  2. in the scope of negation in a superordinate clause
  3. in interrogatives

---

\(^{49}\)Numbers reflect the frequencies in the *NDC*, the symbol (✓) indicates that uses are not attested in the *NDC* but they are reported in grammars, literature or other corpora.
Icelandic purfa with NP complements

(50) Ég þarf bifvélavirkja (til þess að gera við bílinn)
I need car.mechanic to it-GEN to repair mit car
mine

‘I need a car mechanic to get my car repaired.’

Example and translation by Heimir F. Viðarsson.
Icelandic *þurfa* with non-finite clausal complements

With verbless directional phrases (51) and *að*-infinitives

(51) Jón þarf á klóið.\(^5^1\)
John need at toilet
‘John needs to go to the toilet.’

(52) ég þurfti að fara.\(^5^2\)
I need-PST to go-INF
‘I had to go.’

▶ *þurfa* with *að*-infinitives the *Nordic Dialect Corpus*: 75 in non-veridical/ 125 in affirmative contexts

---

\(^{51}\) Example and translation by Heimir F. Viðarsson.

\(^{52}\) As cited in Einarsson (1949, S. 166)
Icelandic *purfa* with non-finite clausal complements

Only as NPI:

(53) það þarf ekki að vera satt.\(^{53}\)

it need NEG to be-INF true

‘It needn’t be true.’

Gothic *paurban*

<table>
<thead>
<tr>
<th>intr.</th>
<th>NP&lt;sub&gt;gen&lt;/sub&gt;</th>
<th>pers.</th>
<th>fin. clause</th>
<th>dir. PP</th>
<th>bare inf. circ.</th>
<th>bare inf. epist.</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>unrestr.</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>?1</td>
<td></td>
</tr>
<tr>
<td>NPI</td>
<td>–</td>
<td>14</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>1</td>
<td>–</td>
</tr>
</tbody>
</table>

► Attested in 3 syntactic patterns

1. with NP<sub>gen</sub>
2. with finite *ei*-clauses
3. with bare infinitive in circumstantial interpretation (almost all with animate subject referent)

► Almost exclusively in well known NPI licensing contexts (15)

1. scope of a negation (12)
2. interrogatives (3)
   ▶ relative clauses (3) (licensing context?)
   ▶ declarative clause (1)
Occurrences of *paurban* in Wulfila’s bible

17 instances of *paurban*

- **polarity:**
  - 13 from non-veridical environments
  - 4 from relative clauses

- **argument-structure:** 13 with $N_{gen}$, 2 with bare infinitives, 2 with finite clauses
  - 13 with $N_{gen}$
  - 2 with bare infinitives
  - 2 with finite clauses
Gothic ḫaurban with NP complements

With genitive NPs:

(54) IndexPath marker

‘As Jesus heard that, he spoke onto them: It is not the healthy ones who need a doctor but the ill ones.’

\[\text{Wulfila Bible Codex Argenteus, Matthias 9:12, cited as in \textit{Wulfila Project}.}\]
Gothic *paurban* with finite clausal complements

With negation:

(55) nu witum ei þu kant alla, now know-1P COMP you can-2S everything-ACC.P jah ni þarft [ei þuk hvas raihnai; bi and NEG need-2S COMP you-ACC who ask by þamma galaubjam þatei þu fram guda urrant.].

that PRF-believe-1P that you from God come-.

‘Now we know that you know everything and that you needn’t be asked. That is why we believe that you came from God.’

---

55 *Wulfila Bible Codex Argenteus*, Johannes 16:30, cited as in *Wulfila Project*. 
With negation (56):

\[(56) \text{aþþan bi broþrulubon ni þaurbum meljan} \]
\[\text{but by brother.love-DAT NEG need-1P write-INF} \]
\[\text{izwis, unte silbans jus at guda} \]
\[\text{you-DAT.P because self-NOM.P her to God-DAT.S} \]
\[\text{uslaisidai sijuþ du frijon} \]
\[\text{educate-PTCP.PST.NOM.P be.2P to love-INF} \]
\[\text{izwis misso.}^{56} \]
\[\text{izwis.ACC.P each.other} \]

‘About the brother love, I needn’t write you; God has already taught you how to love each other.’

---

^{56} \textit{Wulfila Bible Location: Codex Ambrosianus B, Thessalonicher I 4:9, as cited in Wulfila Project.}
Gothic \textit{paurban} with non-finite clausal complements

...and without negation (57):

(57) jah dugunnun suns faurqîphanumeric allai. sa and begin-PST-3S suddenly forgive-INF all-NOM the frumista qaþ: land bauhta jah first.M.NOM.S spoke land-ACC buy-PST-1S and þarf galeiþan jah saihsan þata; bidja NEED.1S PRF-go-INF and see-INF it.ACC beg-1S þuk, habai mik faurqiþapanana.\textsuperscript{57} you.ACC have-IMP2.S me forgive-PTCP.PST.ACC

‘And all of a sudden everybody began to apologize. The first on spoke: I bought land and I need to go to take a look at it. I ask you to excuse me.’

\textsuperscript{57} \textit{Wulfila Bible Codex Argenteus}, Lukas 14:18, cited as in \textit{Wulfila Project}. 
NPI vs. distributionally unrestricted ‘need’ verb uses in Germanic

<table>
<thead>
<tr>
<th></th>
<th>intrans</th>
<th>trans</th>
<th>impers.</th>
<th>fin. clause</th>
<th>dir. PP</th>
<th>inf. circ.</th>
<th>inf. epist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goth. <em>þaurban</em> + bare Inf.</td>
<td>–</td>
<td>NPI</td>
<td>–</td>
<td>NPI</td>
<td>NPI</td>
<td>NPI</td>
<td>–</td>
</tr>
<tr>
<td>O. Sax. <em>thurban</em> + bare Inf.</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>NPI</td>
<td>NPI</td>
<td>–</td>
</tr>
<tr>
<td>O. Eng. <em>þurban</em> + bare Inf.</td>
<td>–</td>
<td>?NPI</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>NPI</td>
<td>–</td>
</tr>
<tr>
<td>O. H. Ger. <em>thurfan</em> + bare Inf.</td>
<td>NPI</td>
<td>NPI</td>
<td>–</td>
<td>–</td>
<td>NPI</td>
<td>NPI</td>
<td>–</td>
</tr>
<tr>
<td>M. H. Ger. <em>thurfan</em> + bare Inf.</td>
<td>NPI</td>
<td>NPI</td>
<td>–</td>
<td>–</td>
<td>NPI</td>
<td>NPI</td>
<td>–</td>
</tr>
<tr>
<td>Mod. Dt. <em>hoeven</em> + <em>te</em>-Inf.</td>
<td>–</td>
<td>NPI</td>
<td>NPI</td>
<td>–</td>
<td>NPI</td>
<td>NPI</td>
<td>NPI</td>
</tr>
<tr>
<td>Mod. Ger. <em>brauchen</em> + (zu)-Inf.</td>
<td>–</td>
<td>unrestr.</td>
<td>unrestr.</td>
<td>NPI</td>
<td>NPI</td>
<td>NPI</td>
<td>NPI</td>
</tr>
<tr>
<td>Mod. Dan. <em>behøve</em> + (at)-Inf.</td>
<td>–</td>
<td>unrestr.</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>NPI</td>
<td>NPI</td>
</tr>
<tr>
<td>Mod. Eng. <em>need</em> + bare Inf.</td>
<td>–</td>
<td>unrestr.</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>NPI</td>
<td>NPI</td>
</tr>
<tr>
<td>Mod. Nor. <em>trenge</em> + bare Inf.</td>
<td>–</td>
<td>unrestr.</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>NPI</td>
<td>NPI</td>
</tr>
<tr>
<td>Mod. Den. <em>behøve</em> + bare Inf.</td>
<td>–</td>
<td>unrestr.</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>NPI</td>
<td>NPI</td>
</tr>
<tr>
<td>Mod. Swe. <em>behöva</em> + bare Inf.</td>
<td>–</td>
<td>unrestr.</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>unrestr.</td>
<td>NPI</td>
</tr>
<tr>
<td>Mod. Isl. <em>þurfa</em> + <em>að</em>-Inf.</td>
<td>–</td>
<td>unrestr.</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>(unrestr.)</td>
<td>unrestr.</td>
</tr>
<tr>
<td>Mod. Nor. <em>behøve</em> + <em>a</em>-Inf.</td>
<td>–</td>
<td>unrestr.</td>
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<td>–</td>
<td>–</td>
<td>unrestr.</td>
<td>–</td>
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<td>Mod. Nor. <em>trenge</em> + <em>a</em>-Inf.</td>
<td>–</td>
<td>unrestr.</td>
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<td>–</td>
<td>–</td>
<td>unrestr.</td>
<td>–</td>
</tr>
<tr>
<td>Mod. Engl. <em>need</em> + <em>to</em>-Inf.</td>
<td>–</td>
<td>unrestr.</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>unrestr.</td>
<td>–</td>
</tr>
</tbody>
</table>

- Finnish *tarvita* has a complex use spectrum too:
  1. transitive verb (non-npi)
  2. circumstantial modal verb (npi)
  3. epistemic modal verb (npi)
- loss of personal inflection (influence from *pitää*, cf. Saukkonen)
- epistemic uses are rare but attested in corpora
- loan word from Germanic
(58) Ruotsissa on kuulemma Sweden-INN be-3S according.to.what.i.have.heard kuusi uimarantaa, joissa ei tarvita six beach-PAR REL-P-INE no-3S need uimahousujen yläosia.58 swimmsuit-P-GEN upper.part-P-PAR
‘I hear that there are six beaches in Sweden on which one does not need the upper part of one’s swimsuit.’

58 FCI cAU 3308801, as cited in Kangasniemi (1992)
Kun matkustatte Suomeen tai Suomessa teidän ei tarvitse ajatella miten atkanne sujuu parhaiten. Me ajattelemme journing-2P go-3S best we think-1P puolestanne.59

‘When you travel to Finland or in Finland, you need not think how your journing will go best. We will do the thinking for you.’

59M&N ADV 2206202, as cited in Kangasniemi (1992, S. 80–81)
(60) Se voi ollak kyllä/ uskonnollinen ajatus/ mutta sen ei tarvitse olla kristillinen.  
‘It may well be/ a religious thought/ but it need not be a Christian one.’

---

60 RAD REL 7509205, as cited in Kangasniemi (1992, S. 192)
Variation among NPIs

Richter und Soehn (2006): NPIs may differ with respect to three dimensions

   1.1 anti-morphic (superstrong)
   1.2 anti-additive (strong)
   1.3 downward entailing (weak)
   1.4 question conditional comparative operator
   1.5 imperative operator

2. licensing domain
   2.1 same NP/same AdvP ($überhaupt$)
   2.2 same clause
   2.3 same utterance (allowing licenser in superordinate clause)

3. additional collocational restrictions
   3.1 conditions on extraction
   3.2 conditions on lexical collocates
   3.3 scope intervention conditions
Negative Polarity in HPSG: *brauchen*

\[
\begin{align*}
\text{PHON} & \quad \left< \text{brauchen} \right> \\
\text{SYNSEM} & \quad \left[ \begin{array}{c}
\text{LOCAL} \\
\text{CONT|MAIN} \ 1 \ \text{scheren}'
\end{array} \right] \\
\text{COLL} & \quad \left< \begin{array}{c}
\text{complete-utterance} \\
\text{LF-LIC} \ [\text{EXC} \ \text{quest-cond-comp-op} (1)], \ldots
\end{array} \right>
\end{align*}
\]

- LF-LIC determines minimum strength of licenser
- Type of elements in COLL value list determines size of licensing domain
- COLL may accommodate further collocational constraints
- Flexible analysis of variation among NPIs
- Necessary to capture different licensing conditions for ‘need’ verbs in each Germanic language
## Licensors of *brauchen need* and *hoeven*

van der Wouden (2001)

<table>
<thead>
<tr>
<th>licensor</th>
<th>need</th>
<th>brauchen</th>
<th>hoeven</th>
</tr>
</thead>
<tbody>
<tr>
<td>negation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>superordinate negation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><em>without</em>( -to) - infinitives</td>
<td>n.a.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>semi-negatives</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>only</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>in restrictor of ∀</td>
<td>✓</td>
<td>(✓)</td>
<td>✓</td>
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<tr>
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<td>✓</td>
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<td>after superlatives</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>irreal equative infinitives with <em>too</em></td>
<td>n.a.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>questions</td>
<td>✓</td>
<td>✓</td>
<td>*</td>
</tr>
<tr>
<td>in subjunctive clauses</td>
<td>✓</td>
<td>✓??</td>
<td>*</td>
</tr>
<tr>
<td>in <em>before</em>-clauses</td>
<td>✓</td>
<td>no ex.</td>
<td>?</td>
</tr>
<tr>
<td>in concessive clauses</td>
<td>✓</td>
<td>no ex.</td>
<td>*</td>
</tr>
<tr>
<td>in antecedent of conditionals</td>
<td>✓</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
van der Wouden (2001): Questions license negative polar ‘need’ verbs in English and German, but not in Dutch:

(61) Need we say more?
(62) Brauchen wir noch weiter (zu) reden?
need we yet more to talk

(63) Was brauchen Sie Mitleiden mit ihm zu haben?⁶¹
What need you pity with him to have
‘What need you pity him?’

(64) * Hoef ik meer te zeggen?
need I more to say

▶ In recent time, *hoeven was still acceptable in rhetoric questions

---

⁶¹ DTA: [Richardson, Samuel]: Clarissa. Bd. 2. Göttingen, 1748. #220.
Antecedents of conditionals license negative polar ‘need’ verbs in English but not in Dutch. In German marginally acceptable.

(65) If you need to borrow money at all, borrow as little as possible

(66) * Als je al geld hoeft te lenen, leen zo min mogelijk
if you at.all money need to borrow borrow as little possible

(67) ? WENN Du Geld zu (schon) leihen brauchst, dann leihe so wenig wie möglich.\(^{62}\)
borrow as little as possible

\(^{62}\)Example JM
BUT!! Licensed in *wenn*-clefts:

(68) Wenn einer Angst zu haben braucht, dann Du!°

if anybody fear to have need than you

‘If there is anybody who should be afraid, it is you.’

°Example JM
How can one explain the distribution of negative polar uses of ‘need’ verbs?

Depending on the language, only a subset of ‘need’ verb uses NPIs, the rest is distributionally unrestricted.

Two solutions:
- NPI-hood as lexical feature or some lexical specification (cf. Richter und Soehn 2006)
- NPI-hood as pragmatically inference on expressions that describe upper or lower ends of scales (cf. Israel 1996, Israel 2011)

Assumption here: there has to be some specification for each single use.

Israel’s account does not explain why eg. Danish behøver is distributionally unrestricted as transitive verb, but an NPI as verb with non-finite complements.
Structure of lexicon entries I

Dutch *hoeven*

\[ [+\text{NPI}] \]

\[ \text{NP} \quad \text{non-finite} \]

\[ [+\text{NPI}] \quad [+\text{NPI}] \]

\[ \text{dir. PP} \quad \text{te inf.} \]

\[ [+\text{NPI}] \quad [+\text{NPI}] \]

\[ \text{circumstantial} \quad \text{epistemic} \]

\[ [+\text{NPI}] \quad [+\text{NPI}] \]

Gothic *paurban*

\[ \text{NP} \quad \text{clausal} \quad [+\text{NPI}] \]

\[ \text{finite } ei \quad \text{non-finite} \]

\[ [+\text{NPI}] \quad [+\text{NPI}] \]

\[ \text{bare inf.} \]

\[ [+\text{NPI}] \]

\[ \text{circ.} \]

\[ [+\text{NPI}] \]
Structure of lexicon entries II

German *brauchen*

- **NP**
  - **acc**
  - **trans.**
  - **unpers.**

**clausal**
- [+NPI]

**finite**
- *dass*-clause
- [+NPI]

**non-finite**
- [+NPI]

- **subj**
  - *br*-subj
  - inf
  - [+NPI]

- **obj**
  - *br*-subj
  - inf
  - [+NPI]

- **dir. PP**
  - [+NPI]

- **(zu) inf.**
  - [+NPI]

- **bare inf.**
  - [+NPI]

- **circ.**
  - [+NPI]

- **epist.**
  - [+NPI]
Norwegian *trenge/behøve*

- **NP**
  - non-finite
  - **non-å-inf**
    - [+NPI]
    - **dir. PP**
      - [+NPI]
      - **circ.**
        - [+NPI]
    - **bare inf.**
      - [+NPI]
      - **circ.**
        - [+NPI]
    - **å-inf.**
      - [+NPI]
      - **epist.**
        - [+NPI]

Swedish *behöver*

- **NP**
  - bare inf.
  - **circ.**
    - [+NPI]
  - **epist.**
    - [+NPI]
Icelandic *purfa*

NP   non-finite

  dir. PP  að-inf.
  
  ([+NPI])

    circ.  epist
    
    [+NPI]
Protogermanic *purban

\[
\begin{array}{c}
\text{NP}_{\text{gen}} \quad \text{clausal} \\
\quad [+\text{NPI}] \\
\quad \text{finite} \quad \text{non-finite} \\
\quad [+\text{NPI}] \quad [+\text{NPI}] \\
\quad \text{dir. PP} \quad \text{bare inf.} \\
\quad [+\text{NPI}] \quad [+\text{NPI}] \\
\quad \text{circ.} \\
\quad [+\text{NPI}]
\end{array}
\]
Previous insights


Type Differentiation

Green 2011, sec. 3: acquisition of structures with subtypes via type differentiation

1. acquisition of new subtypes based on a known supertype (top down, deductive learning)

```
sometype
    subtype1 [G+]
    subtype1 [G–]

sometype →
```

➤ discovering a yet unnoticed difference between known objects of a certain type

2. acquisition of a reconstructed super type, by revising the value of an attribute (bottom up, inductive learning)

```
supertype [F+]
    sometype [F+,G–]
    othersubtype [F+,G–]
    othersubtype [F+,G+]

sometype [F+,G–] →
```

➤ reconstructing a new super type by abstracting over a feature of a already known type of objects
Type differentiation (top down)

- learner makes revisions about the super type too
- assumes a underspecified feature of some property which was considered irrelevant at previous stage
Type differentiation (top down)

- learner makes revisions about the super type too
- assumes a underspecified feature of some property which was considered irrelevant at previous stage
Type differentiation (top down)

- learner makes revisions about the super type too
- assumes a underspecified feature of some property which was considered irrelevant at previous stage
Type differentiation (top down)

- learner makes revisions about the super type too
- assumes a underspecified feature of some property which was considered irrelevant at previous stage
Type differentiation (bottom up)

\[
\begin{bmatrix}
\text{COLOR} & \text{red} \\
\text{TASTE} & \text{sweet} \\
\text{apple} &
\end{bmatrix}
\]

1

2
Type differentiation (bottom up)

\[
\begin{array}{c}
\text{COLOR} \quad \text{red-\vee-yellow} \\
\text{TASTE} \quad \text{sweet} \\
\text{apple}
\end{array}
\]

\[
\begin{array}{c}
\text{COLOR} \quad \text{red} \\
\text{TASTE} \quad \text{sweet} \\
\text{red-apple}
\end{array} \\
\begin{array}{c}
\text{COLOR} \quad \text{yellow} \\
\text{TASTE} \quad \text{sweet} \\
\text{yellow-apple}
\end{array}
\]

▷ 1

▷ 2
Type differentiation (bottom up)

Main mechanisms:
- assumption of supertypes with underspecified features
- revision of types
**Terminology**

- **top level entry**: highest level use with full phonological specification
- **level n entry**: use that has a mother with full phonological specification
- **terminal level use**: use that has no daughters
- **use spectrum**: a tree that has a top level entry as its top and each branch and that has only branches that end as terminal level uses
Based on previous work:

- transitive verbs in German cf. S. Müller (2002), S. Müller (2013)
- circumstantial modal verbs as event modifier cf. Maché (2013)
- epistemic modal verbs as speech event modifier cf. Hacquard (2006)
Stage 1: opaque transitive verb

- Syntactic information of a sign is stored in the attribute CAT
  - *brauchen* takes a NP argument with structural case as SUBJ
  - and another NP argument with structural case as DOBJ

- Semantic information: referent of ARG2 marked as opaque object
Stage 1: opaque transitive verb

▶ Syntactic information of a sign is stored in the attribute CAT
  ▶ *brauchen* takes a NP argument with structural case as SUBJ
  ▶ and another NP argument with structural case as DOBJ

▶ Semantic information
Transition 1: Opaque transitive verb $\rightarrow$ circumstantial control verb

- As long as there is only evidence for an analysis as a transitive verb in the input data: L1 learner tends to analyze verb as transitive
  - accusative article/adjective
  - accusative ending in weak masculine declination -en

- To be tested: is there an increase of deverbal nouns (nominalized infinitives, -ung-derivations, . . .)?

- Or a decrease in objects with articles??
Stage 2: Circumstantial control verb

Syntactic information of a sign is stored in the attribute CAT

- *brauchen* takes a NP argument with structural case as SUBJ
- and another infinitive complement whose REFERENTIAL SUBJ is correferent with the matrix SUBJ
Stage 2: Circumstantial control verb

▶ Syntactic information of a sign is stored in the attribute CAT

▶ *brauchen* takes a NP argument with structural case as SUBJ

▶ and another infinitive complement whose referential SUBJ is correferent with the matrix SUBJ
Syntactic information of a sign is stored in the attribute CAT

- "brauchen" takes a NP argument with structural case as SUBJ
- and another infinitive complement whose referential SUBJ is correferent with the matrix SUBJ
Transition 2: Circumstantial control verb $\Rightarrow$ circumstantial raising verb

- As long as there is only evidence for control verb in input data: L1 learner tends to analyze verb as control verb
  - animate/agentive/referent noun phrase
- DTA corpus: steady increase of inanimate subjects from 1700: necessary for L1-learner to trigger reanalysis
Stage 3: Circumstantial raising verb

[Diagram]

▶ Syntactic information of a sign is stored in the attribute CAT
▶ and another infinitive complement whose SUBJ is correferent with the matrix SUBJ
Stage 3: Circumstantial raising verb

Phonetic information of a sign is stored in the attribute CAT and another infinitive complement whose SUBJ is correferent with the matrix SUBJ.
Stage 3: Circumstantial raising verb

- Syntactic information of a sign is stored in the attribute CAT and another infinitive complement whose SUBJ is correferent with the matrix SUBJ.
Transition 3: Circumstantial raising verb ⇒ epistemic modal verb

- As long as there is only evidence for circumstantial raising verb in input data: L1 learner tends to analyse verb as a circumstantial raising verb
  - embedded verb denotes a clearly temporally limited event
- To be investigated: Is there an increase of stative complements???
Stage 4: Epistemic raising verb

- Syntactic information of a sign is stored in the attribute CAT
  - *brauchen* takes a NP infinitive complement whose SUBJ is correferent with the matrix SUBJ
  - modal operator modifies message type *proposition*, some higher presentation of VP like S (cf. Ginzburg und Sag 2000, S. 26, 42–46)?
Stage 4: Epistemic raising verb

► Syntactic information of a sign is stored in the attribute CAT
  ► *brauchen* takes a NP infinitive complement whose SUBJ is correferent with the matrix SUBJ
  ► modal operator modifies message type *proposition*, some higher presentation of VP like S (cf. Ginzburg und Sag 2000, S. 26, 42–46)
Syntactic information of a sign is stored in the attribute CAT

- *brauchen* takes a NP infinitive complement whose SUBJ is correferent with the matrix SUBJ
- modal operator modifies message type *proposition*, some higher presentation of VP like S (cf. Ginzburg und Sag 2000, S. 26, 42–46)?
Previous insights

- Green (2011): L1-Acquisition is branching of lexicon entries adding more feature specification to their daughters
1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input

2.

3.

4.
Opaque trans. verb $\Rightarrow$ circ. control verb

$$\left[ SC \langle NP[\text{str}]_i, [\text{HEAD noun-verb}] \rangle \right]$$

1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input
2. Due to increasing number of ambiguous input, L1 makes a new assumption about the mother node, dismissing its specification for the HEAD-feature
3. 
4. 
1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input
2. Due to increasing number of ambiguous input, L1 makes a new assumption about the mother node, dismissing its specification for the HEAD-feature
3. original target use becomes only one variant among others
4. 
Opaque trans. verb ⇒ circ. control verb

1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input
2. Due to increasing number of ambiguous input, L1 makes a new assumption about the mother node, dismissing its specification for the HEAD-feature
3. original target use becomes only one variant among others
4. L1-learner starts to use lexical item in an innovative way
1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input

2. 

3. 

4. 

Circ. control verb ⇒ circ. raising verb
Circ. control verb ⇒ circ. raising verb

1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input
2. Due to increasing number of ambiguous input, L1 makes a new assumption about the mother node, dismissing its specification for the ?? feature
3.
4.
1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input

2. Due to increasing number of ambiguous input, L1 makes a new assumption about the mother node, dismissing its specification for the ?? feature

3. original target use becomes only one variant among others
1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input

2. Due to increasing number of ambiguous input, L1 makes a new assumption about the mother node, dismissing its specification for the ?? feature

3. original target use becomes only one variant among others

4. L1-learner starts to use lexical item in an innovative way
1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input

2.

3.

4.
Circ. raising verb ⇒ epist. raising verb

1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input
2. Due to increasing number of ambiguous input, L1 makes a new assumption about the mother node, dismissing its specification for the IND-feature
3.
4.
1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input
2. Due to increasing number of ambiguous input, L1 makes a new assumption about the mother node, dismissing its specification for the IND-feature
3. original target use becomes only one variant among others
4. 
1. L1-learner assumes lexicon entry in accordance with most frequent unambiguous form in input

2. Due to increasing number of ambiguous input, L1 makes a new assumption about the mother node, dismissing its specification for the IND-feature

3. original target use becomes only one variant among others

4. L1-learner starts to use lexical item in an innovative way
Acquisition of German *brauchen* – stage 1

\[
\begin{align*}
\text{COLL} & \quad \text{non-npi} \\
\text{...ARG-ST} & \quad \left[ \begin{array}{l}
\text{NP}[\text{str}], \\
\text{CAT|HEAD} \\
\text{AGR|CASE} [\text{str}] \\
\text{noun} \\
\text{indv}
\end{array} \right]
\end{align*}
\]
Acquisition of German *brauchen* – stage 2
Acquisition of German *brauchen* – stage 3
Acquisition of German *brauchen* – stage 4
Generalisation on Acquisition of NPI uses

Generalisation
If a learner acquires a use of lexical item that is NPI, all the further uses which descend from that use inherit its COLL value.
The End


Girnth, Heiko (2000). Untersuchungen zur Theorie der Grammatikalisierung am Beispiel des


— (2013). “On the Copula, Specificational Constructions and Type Shifting”.


