Definiteness in plural generics: Decomposing maximality

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Research question

- This talk is about two sorts of generic plural nominals.
  1. Kind-denoting (K) *Dinosaurs are extinct*.
  2. Generic-characterizing (Gen) *Dogs bark.*
- In certain languages with definiteness-marking, K and Gen plurals differ with respect to this marking.
- What are the implications on theories of genericity?

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Background

- Languages with definiteness-marking can be divided in two with respect to K and Gen plurals. (Dayal 2004, Farkas & de Swart 2007, 2010)
  1. Both can be non-definite: English, Dutch, German
     i. Dinosaurs are extinct. *kind-denoting (K)*
     ii. Dogs bark. *generic-characterizing (Gen)*
  2. Both must be definite: Italian, Spanish, French, Romanian, Hungarian, Greek
     i. *(I) dinosauri sono estinti. *kind-denoting (K)*
     the dinosaurs are extinct
     ii. *(I) cani abbaiano. *generic-characterizing (Gen)*
     the dogs bark

Background

- Languages with definiteness-marking can be divided in two with respect to K and Gen plurals. (Dayal 2004, Farkas & de Swart 2007, 2010)
  1. Both can be non-definite: English, Dutch, German
  2. Both must be definite: Italian, Spanish, French, Romanian, Hungarian, Greek
- Multiple theories of genericity do not expect K and Gen plurals to differ with respect to definiteness-marking.
  - (Chierchia 1998, Dayal 2004, Farkas & de Swart 2007, 2010, Cohen 2020)

i. sl.5–14: They do in Dutch, German, Fering and Hebrew.

ii. sl.15–31: Implications for theories of genericity.

Dutch (Oosterhoff 2008)

- Oosterhoff collected acceptability judgements from 29 speakers, each speaking a different variety of Dutch or Frisian.

1. (De) telefoons is uitgevonden door een Schot. (K)
   ‘(The) telephones were invented by a Scotsman.’
   - Non-definite 2.66/5, definite 2.52/5
2. (De) wielen zijn rond. ‘(The) wheels are round.’ (Gen)
   (De) tofzuigers maken lawaai. ‘(The) vacuum cleaners make noise.’ (Gen)
   - Non-definite 5/5, definite 1.45/5

	non-definite	definite
kind-denoting (K)	2.66	2.52
generic-characterizing (Gen)	5.00	1.45

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German (Barton et al. 2015)

- In an experiment on German by Barton et al. (2015), the acceptance of definite K and Gen plurals was respectively 84.9% and 61.9%.
  - t[53]=5.877, p<0.11

1. Die Eisbären sind vom Aussterben bedroht. 84.9% (K)
   'The polar bears are facing extinction.'
2. Die Pferde sind Herdentiere. 61.9% (Gen)
   'The horses are gregarious animals.'

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  - t[53]=5.877, p<0.11
  1. ‘The polar bears are facing extinction.’ 84.9% (K)
  2. ‘The horses are gregarious animals.’ 61.9% (Gen)
- The acceptance of non-definite K and Gen plurals was at 99.5%.
  3. Blauwale sind vom Aussterben bedroht. 99.5% (K)
     ‘Blue whales are facing extinction.’
  4. Kaninchen sind Einzelgänger. 99.5% (Gen)
     ‘Rabbits are loners.’

German (Barton et al. 2015)

1. ‘The polar bears are facing extinction.’ 84.9% (K)
2. ‘The horses are gregarious animals.’ 61.9% (Gen)
3. ‘Blue whales are facing extinction.’ 99.5% (K)
4. ‘Rabbits are loners.’ 99.5% (Gen)

i. Definite-marking K plurals degrades them by 15%.

ii. Definite-marking Gen plurals degrades them by 40%.

	non-definite	definite
kind-denoting (K)	99.5	84.9
generic-characterizing (Gen)	99.5	61.9

Fering (Schwarz 2009)

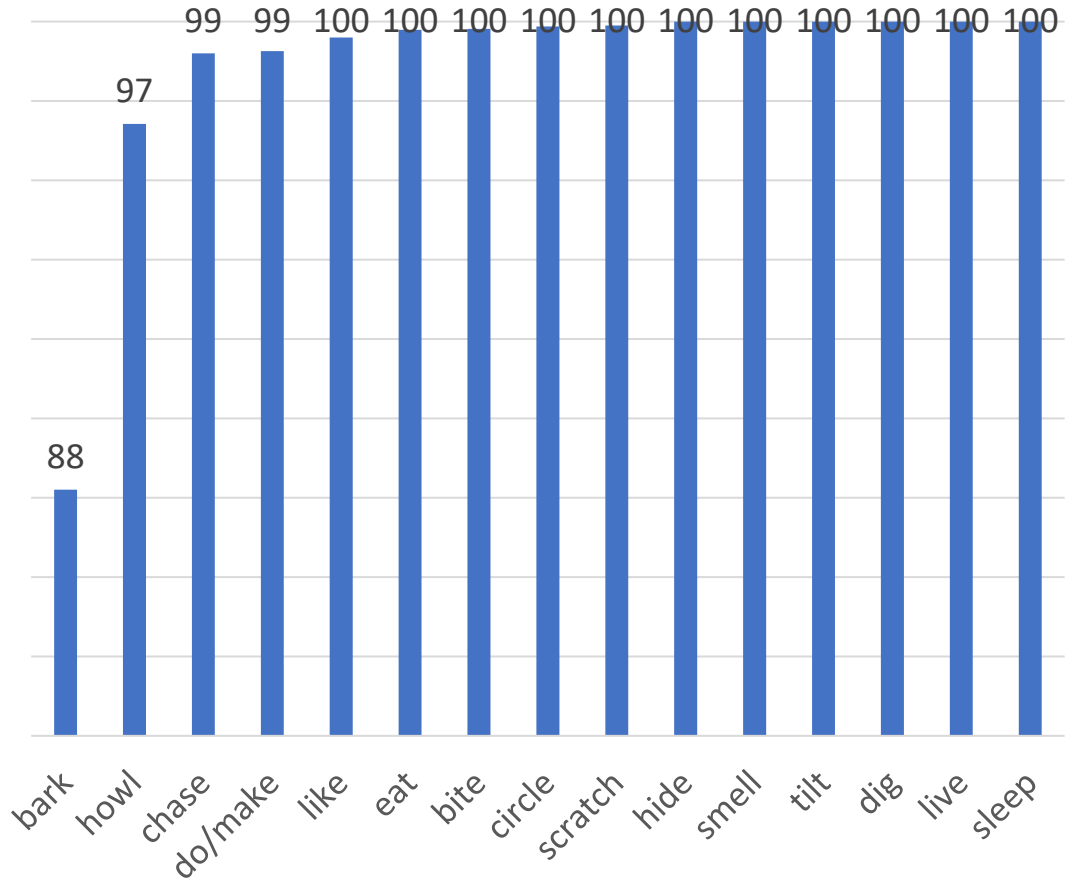
1. Between the A-form and D-form definite article,
   Only the A-form is possible with the K plural below.
   - {A, *Dün} waalfasker sterew ütj. (Schwarz 2009:ex.67b)
     {the$_A$, the$_D$} whales are going extinct.
2. The Gen plurals below are preferably non-definite.
   i. (#A) Roozen san emfintelk jin froost. (Schwarz 2009:fn.25)
      (the$_A$) roses are sensitive against frost.
   ii. (#A) Eerdaapler san sünj.
      (the$_A$) potatoes are healthy.

Hebrew: Generic-characterizing plurals

- Hebrew Gen plurals can be non-definite.
  In the present study, they are preferably non-definite.
- Via Google search auto-complete, I collected 42 verbs suggested to follow *láma klavím* ‘why (do/are) dogs’.
- I conducted exact searches for “láma klavím V”, and 15 verbs yielded more than 10 results.
- With all 15 verbs, the non-definite *klavím* ‘dogs’ was more frequent than the definite *ha-klavím* ‘the dogs’.

Hebrew: Generic-characterizing plurals

- Most verbs: 100% have the results had the non-definite *klavím* ‘dogs’.
- *novxím* ‘bark’: 88% had the non-definite.
- In this study, Gen *klavím* ‘dogs’ is preferably non-definite.



Hebrew: Kind-denoting plurals

- With four kind-selecting verbs, non-definite plural arguments are judged as unable to be kind-denoting.
  1. nikxedú ‘have gone extinct’
  2. hukxedú ‘were exterminated’
  3. hitrabú ‘have {propagated, increased in number}’
  4. hitmaatú ‘have {dwindled, decreased in number}’
- dinozáurim nikxedú. ‘Dinosaurs have gone extinct.’
  i. × ‘Dinosaurs as a kind have gone extinct.’
  ii. (√ ‘A number of kinds of dinosaurs have gone extinct.’)

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Hebrew: Kind-denoting plurals

- With four kind-selecting verbs, non-definite plural arguments are judged as unable to be kind-denoting.
- This judgement is corroborated by corpus data.
  I extracted from heTenTen21 (Jakubíček et al. 2013) the cases where the arguments are denoted by plurals. The percent of definites

1.	nikxedú	‘have gone extinct’	98.2%	(270/275)
2.	hukxedú	‘were exterminated’	100%	(17/17)
3.	hitrabú	‘have propagated’	96.7%	(231/239)
4.	hitmaatú	‘have dwindled’	96.2%	(179/186)

Data: Conclusion

- In reports on Dutch, German, Frisian and Hebrew, definite K plurals are better than definite Gen plurals.
- Next, I review two theories of genericity which do not expect K and Gen plurals to differ with respect to definiteness.

Neo-Carlsonian

- In the (Neo-)Carlsonian approach to genericity, generic characterization with plurals is mediated by kind-reference.
  - (Carlson 1980, Chierchia 1998, Dayal 2004, Cohen 2020)
- ∩ (*nominalization*, *nom*) is the licensor of kind-reference.
- *Dogs* as kind-denoting denotes ∩DOGS
  - ⟦Dogs are widespread.⟧ = WIDESPREAD(∩DOGS)

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Neo-Carlsonian (Chierchia 1998)

- ∩ (*nominalization*, *nom*) is the licensor of kind-reference.
- Kind-denoting *dogs* denotes ∩DOGS
  - ⟦Dogs are widespread.⟧ = WIDESPREAD(∩DOGS)
- Gen *dogs* is initially kind-denoting, and eventually generic-quantification is introduced over instances of the kind.
  - ⟦Dogs bark.⟧ = GEN_x [$^{\cup}$∩DOGS(x)] [BARK(x)]
    'It is generally true of an instance of the dog kind (∩DOGS) that it barks.'
  - Crucially, the generic quantification is mediated by kind-reference.
- Next is Oosterhoff's (2008) challenge to this aspect of the neo-Carlsonian approach.

Neo-Carlsonian: Oosterhoff's challenge

- Some consultants reject the non-definite K plural in:
  1. % Ijsberen worden met uitsterven bedreigd. (Oosterhoff 2008:§6, ex.2a)
     'Polar bears are threatened with extinction.'
- Alongside the variation in (1), all consultants accept the non-definite Gen plural in:
  2. Ijsberen leiden een zwervend bestaan. (Oosterhoff 2008:§6, ex.2b)
     'Polar bears lead a roving life.'

Neo-Carlsonian: Oosterhoff's challenge

1. % Ijsberen worden met uitserven bedreigd. (Oosterhoff 2008:§6, ex.2a)
   'Polar bears are threatened with extinction.'
2. Ijsberen leiden een zwervend bestaan. (Oosterhoff 2008:§6, ex.2b)
   'Polar bears lead a roving life.'

- Under the neo-Carlsonian approach, generic characterization as in (2) is mediated by kind-reference as in (1). (sl.16)
  - So, a neo-Carlsonian would conclude from the acceptability of (2) that *ijsberen* 'polar bears' can be kind-denoting.
  - If so, why do some speakers reject kind-denoting *ijsberen* in (1)?

Neo-Carlsonian: Oosterhoff's challenge

1. % Ijsberen worden met uitserven bedreigd. (Oosterhoff 2008:§6, ex.2a)
   'Polar bears are threatened with extinction.'
2. Ijsberen leiden een zwervend bestaan. (Oosterhoff 2008:§6, ex.2b)
   'Polar bears lead a roving life.'

- Based on (1–2), Oosterhoff argues that generic characterization need not be mediated by kind-reference, contra a core tenet of the neo-Carlsonian approach (sl.15).
- Due to this tenet, the approach does not expect K and Gen plurals to differ in definiteness.
- Neither do Farkas & de Swart (2007, 2010), reviewed next.

Optimality-Theoretic

- Farkas & de Swart (2007, 2010) account for the cross-linguistic variation via two optimality-theoretic constraints.
  1. MaxMax: Maximize maximality features of the discourse referent by reflecting them in the nominal projection (via a definite article).
  2. *Def/[–Fam]: Avoid non-familiar definites.
- For F&S, K and Gen plurals denote maximal discourse referents.
  1. K *dogs* denotes the sum of all possible dogs. ΣDOG
  2. Gen *dogs* denotes an open formula whose free variable is bound by the generic operator. GEN_x [… DOG(x) …]

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Optimality-Theoretic

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  1. MaxMax: Maximize maximality features of the discourse referent by reflecting them in the nominal projection (via a definite article).
  2. *Def/[–Fam]: Avoid non-familiar definites.

i. MaxMax » *Def/[–Fam]: High-maximality language
   - Italian, Spanish, French, Romanian, Hungarian, Greek

ii. *Def/[–Fam] » MaxMax: High-familiarity language
   - English, Dutch

Optimality-Theoretic: High-maximality

- MaxMax » *Def/[–Fam]: K and Gen plurals are optimally definite regardless of the familiarity of the discourse referent.
  - I assume unfamiliar ([–Fam]) discourse referents.
    I discuss what can make them [+Fam] in sl.33–36.

EXTINCT(ΣDINOSAUR) $_{[+Max]\ [–Fam]}$	MaxMax	*Def/[–Fam]
Dinosauri sono estinti.	*	
☞ I dinosauri sono estinti.		*

GEN_x [DOG(x)] [BARK(x)] $_{[+Max]\ [–Fam]}$	MaxMax	*Def/[–Fam]
Cani abbaiano.	*	
☞ I cani abbaiano.		*

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Optimality-Theoretic: High-familiarity

- *Def/[–Fam] » MaxMax: K and Gen non-definite plurals are licensed by unfamiliar ([–Fam]) discourse referents.
  - I assume unfamiliar ([–Fam]) discourse referents.
    I discuss what can make them [+Fam] in sl.33–36.

EXTINCT(ΣDINOSAUR) [+Max] [–Fam]	*Def/[–Fam]	MaxMax
☞ Dinosaurs are extinct.		*
The dinosaurs are extinct.	*	

GEN_x [DOG(x)] [BARK(x)] [+Max] [–Fam]	*Def/[–Fam]	MaxMax
☞ Dogs bark.		*
The dogs bark.	*	

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Optimality-Theoretic: Non-ranking

- *Def/[–Fam] and MaxMax are unranked: Definiteness is optional in K and Gen plurals. (Farkas & de Swart 2010; cf. Schaden 2013)
  - I assume unfamiliar ([–Fam]) discourse referents.
    I discuss what can make them [+Fam] in sl.33–36.

EXTINCT(ΣDINOSAUR) [+Max] [–Fam]	*Def/[–Fam]	MaxMax
☞ Dinosaurier sind ausgestorben.		*
☞ Die Dinosaurier sind ausgestorben.	*	

GEN_x [DOG(x)] [BARK(x)] [+Max] [–Fam]	*Def/[–Fam]	MaxMax
☞ Hunde bellen.		*
☞ Die Hunde bellen.	*	

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Decomposing maximality

- For F&S, K and Gen plurals denote maximal discourse referents.
  1. K *dogs* denotes the sum of all possible dogs. ΣDOG
  2. Gen *dogs* denotes an open formula whose free variable is bound by the generic operator. GEN_x [… DOG(x) …]
- (1–2) are distinct notions of maximality.
  - A-priori it would not be surprising if languages distinguished between them, as do Dutch, German, Frisian and Hebrew (sl.5–14).
- These languages motivate decomposing MaxMax.
  i. MaxΣMax: Kind-denoting nominals should be definite.
  ii. MaxGenMax: Generic-characterizing nominals should be definite.

Decomposing maximality

i. MaxΣMax: Kind-denoting nominals should be definite.
ii. MaxGenMax: Generic-characterizing nominals should be definite.

- I hypothesize that (i) is universally ranked above (ii).
  (i) appeals to more prototypical notion of maximality.
  a. The dog kind is instantiated by all possible dog specimens.
  (There are no exceptions to the instantiation relation.)
  b. Generic characterization admits exceptions,
  i.e. the existence of dogs who do not bark does not falsify *Dogs bark*.

Decomposing maximality

i. MaxΣMax: Kind-denoting nominals should be definite.
ii. MaxGenMax: Generic-characterizing nominals should be definite.

- I hypothesize that (i) is universally ranked above (ii).
  (i) appeals to more prototypical notion of maximality.
- Typological prediction: If Gen plurals must be definite in a language, then so must K plurals.
  - ⇔ There are no languages where Gen plurals must be definite, but K plurals need not be.

1. sl.28: Account of the Hebrew pattern.
2. sl.29: Account of the German pattern.

Decomposing maximality: Hebrew

- MaxΣMax » *Def/[–Fam] » MaxGenMax
  1. K plurals are optimally definite.
  2. Gen plurals are optimally non-definite (when [–Fam]).

EXTINCT(ΣDINOSAUR) [+Max] [–Fam]	MaxΣMax	*Def/[–Fam]	MaxGenMax
dinozáurim nikxedú.	*		
☞ ha-dinozáurim nikxedú.		*	

GEN_x [DOG(x)] [BARK(x)] [+Max] [–Fam]	MaxΣMax	*Def/[–Fam]	MaxGenMax
☞ klavím novxím.			*
ha-klavím novxím.		*	

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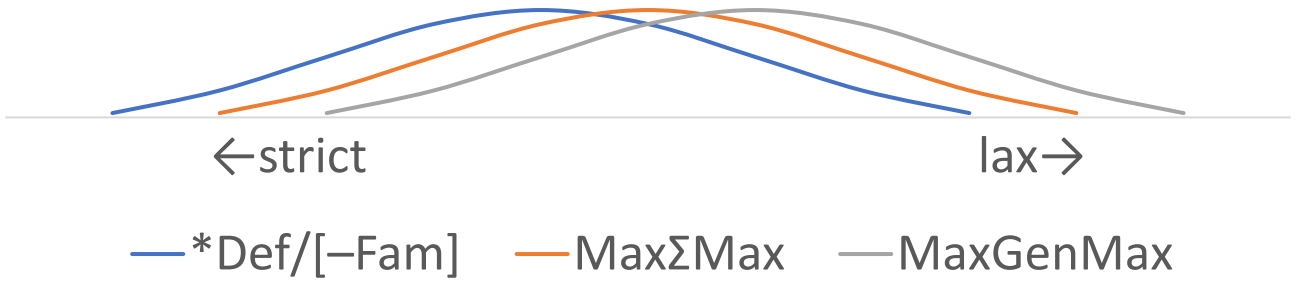
Decomposing maximality: German

- *Def/[–Fam] » MaxΣMax » MaxGenMax, stochastic (Boersma & Hayes 2001)
  - The constraints overlap in such a way that the Max constraints infrequently outrank *Def/[–Fam].
  1. *Def/[–Fam] » MaxΣMax: Non-definite K plurals 99.5% accepted. (sl.8)
  2. *Def/[–Fam] » MaxGenMax: Non-definite Gen plurals 99.5% accepted. (sl.8)
  3. MaxΣMax » MaxGenMax: Definite K plurals are better than definite Gen plurals (84.9% vs. 61.9%). (sl.8)



Decomposing maximality: Conclusion

- Definiteness-marking is worse with Gen compared to K plurals.
- What are the implications on theories of genericity?
  1. It challenges the aspect of the neo-Carlsonian approach where generic characterization is mediated by kind-reference. (sl.16)

     This is met by adopting the aspect of Oosterhoff (2008) where generic characterization need not be mediated by kind-reference. (sl.19)
  2. It challenges the aspect of the optimality-theoretic approach where definiteness-marking of K and Gen is motivated by one constraint. (sl.20)

     Optimality-theory is inherently flexible (Farkas & de Swart 2010), so this challenge is met by decomposing MaxMax into two constraints. (sl.25)

Conclusion

- This talk is about two sorts of generic plural nominals.
  1. Kind-denoting (K) *Dinosaurs are extinct*.
  2. Generic-characterizing (Gen) *Dogs bark.*
- In Dutch, German, Frisian and Hebrew, definite K plurals are better than definite Gen plurals.
- I have discussed the implications on two theories of genericity.
  - (Chierchia 1998, Dayal 2004, Farkas & de Swart 2007, 2010, Cohen 2020)
- Thank you! Any questions?

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Definite plurals in high-familiarity languages

- For F&S, definite K and Gen plurals in high-familiarity languages (English, Dutch) are licensed by familiar discourse referents.
- Below are three factors which license such definite plurals. Are they related to familiarity?
  1. Anaphoricity (Farkas & de Swart 2007:§4.2)
  2. Humanness (Oosterhoff 2008:§5.3)
  3. Distancing (Acton 2019)

Anaphoricity (Farkas & de Swart 2007:§4.2)

- “And that’s Andrew Biles, who until recently worked at Chiquita, one of the world’s largest banana companies. His title at Chiquita was C.E.O. of bananas and pineapples — seriously, that’s the title. As for the bananas:” (link) 
- *The bananas* can be viewed as licensed by discourse-familiarity, brought about by the preceding introduction bananas.

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Humanness (Oosterhoff 2008:§5.3)

- In Oosterhoff's (2008:§5.3) corpus study, there were more definite plurals among nationality names compared to animal names.
  i. The expected value of definite plural nationality names is 44.
  ii. The observed value is 68, which differs by statistical significance.
    - Fisher's exact (two-tailed) $p<.0001$

expected	bare	definite	
animals	172.0	39.0	211
nationalities	194.0	44.0	238
	366	83	449

observed	bare	definite	
animals	196	15	211
nationalities	170	68	238
	366	83	449

Humanness (Oosterhoff 2008:§5.3)

- In Oosterhoff's (2008:§5.3) corpus study, there were more definite plurals among nationality names compared to animal names.
- The increase in definite plural nationality names can be attributed to nationalities being more familiar (to humans) than animals.

expected	bare	definite	
animals	172.0	39.0	211
nationalities	194.0	44.0	238
	366	83	449

observed	bare	definite	
animals	196	15	211
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