

# Danish Quantum Genitives in DP-structure

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# Quantum genitives

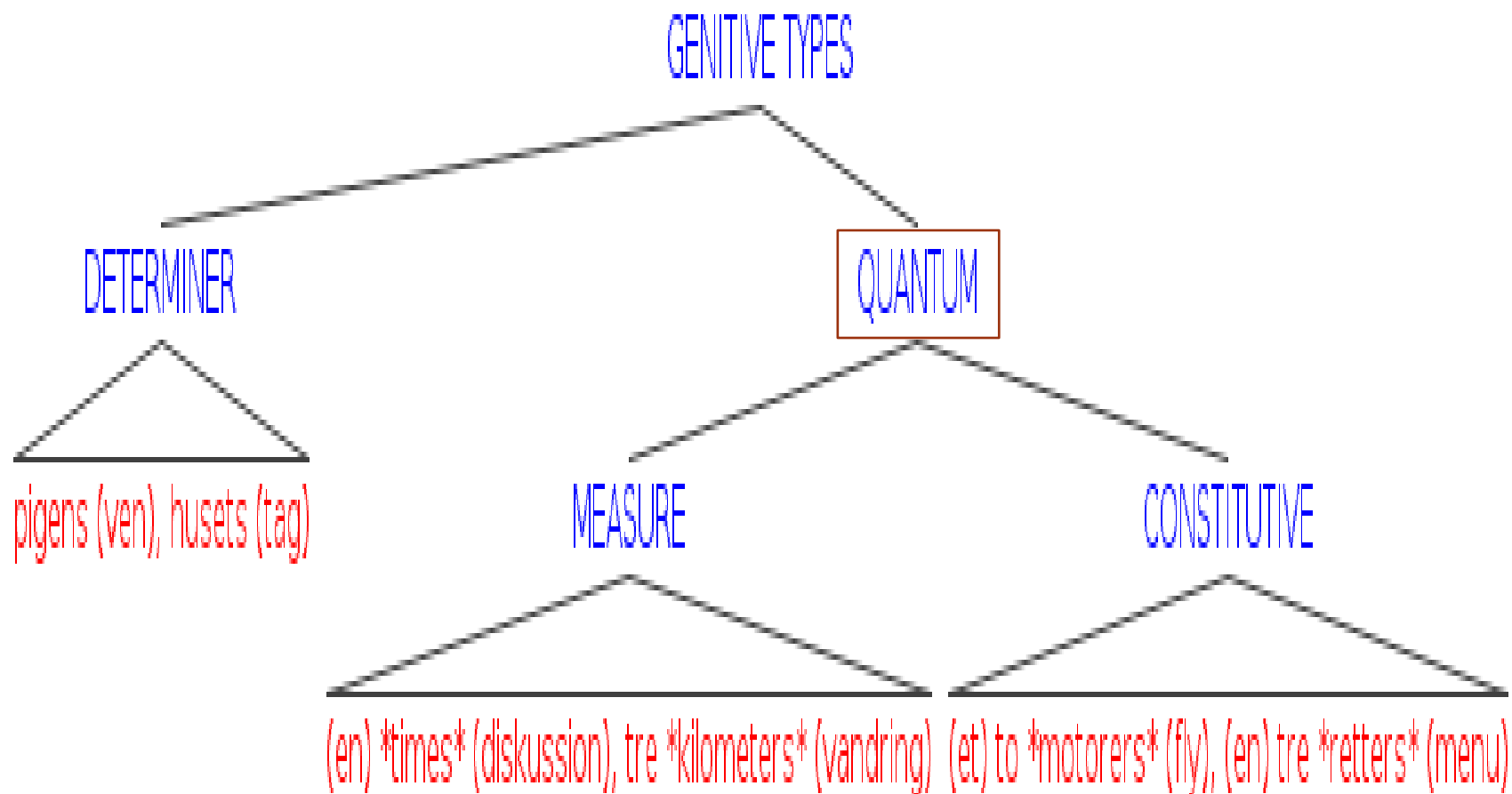
- My presentation addresses genitive constructions like
- **kilometers** vandring      (***kilometers'** hiking*)
- et **ti timers** kursus      (*a **ten hours'** course*)
- en **fem års** fødselsdag    (*a **five years'** birthday*)
- et **en krones** frimærke    (*a **one crown's** stamp*)
- et **to motorers** fly      (*a **two engines'** plane*)
- en **tre retters** menu      (*a **three courses'** menu*)

# Determiner genitives

- Quantum genitives differ significantly from **determiner genitives** like

- **Anne s ven** (Ann's friend)
- **huset s tag** (the house's roof)
- **drengen s snemand** (the boy's snowman)
- **min kone s bil** (my wife's car)

# Genitive classification



# Genitive classification

- This classification is intended to reflect the different **subcategorization requirements** Determiner and Quantum genitives exhibit
- **Determiner genitive s** takes a preceding DP as its complement and shifts it to a **determiner**
- **Quantum genitive s** takes a preceding NP as its complement and shifts it to an **adnominal modifier**

# Subcategorization

- This entails that even though genitive constructions like
- D-genitives
  - a. en drengs snemand (a boy's snowman)
  - b. denne kirkes tårn (this church's tower)
- Q-genitives
  - c. en to meters stang (a two meters' stick)
  - d. et fire motorers fly (a four engines' plane)

appear to have the same syntactic structure, they are in fact different:

# Subcategorization

In (a) and (b) we have two DPs, while (c) and (d) have just one

- a. [<sub>DP</sub> [<sub>DP</sub> en dreng] s telt]                      ([<sub>DP</sub>[<sub>DP</sub> a boy] s tent])
- b. [<sub>DP</sub> [<sub>DP</sub> det skur] s bagdør]                      ([<sub>DP</sub>[<sub>DP</sub> that shed] s back door)
  
- c. [<sub>DP</sub> en [<sub>NP</sub> fem kilo] s kæmpebaby] ([<sub>DP</sub> a [<sub>NP</sub> five kilo] s giant baby])
- d. [<sub>DP</sub> et [<sub>NP</sub> fire motorer] s fly]                      ([<sub>DP</sub> a [<sub>NP</sub> four engine] s plane])

# Subcategorization

- The argument is that the gender of the article in (a) and (b) is determined by the head nouns *dreng* (boy) and *skur* (shed), respectively, whilst in (c) and (d) *kæmpebaby* (giant baby) and *fly* (plane) decide

- |  |                                      |
|--|--------------------------------------|
| a. [DP [DP <b>en dreng</b> ] s telt]<br><b>common</b>                | ([DP[DP a boy] s tent])              |
| b. [DP [DP <b>det skur</b> ] s bagdør]<br><b>neuter</b>              | ([DP[DP that shed] s back door])     |
| c. [DP <b>en</b> [NP fem kilo] s <b>kæmpebaby</b> ]<br><b>common</b> | ([DP a [NP five kilo] s giant baby]) |
| d. [DP <b>et</b> [NP fire motorer] s <b>fly</b> ]<br><b>neuter</b>   | ([DP a [NP four engine] s plane])    |

- In (a) and (b) the embedded DP is the complement of D-genitive s
- In (c) and (d) the NPs *fem kilo* (five kilos) and *fire motorer* (four engines) are complements of Q-genitive s

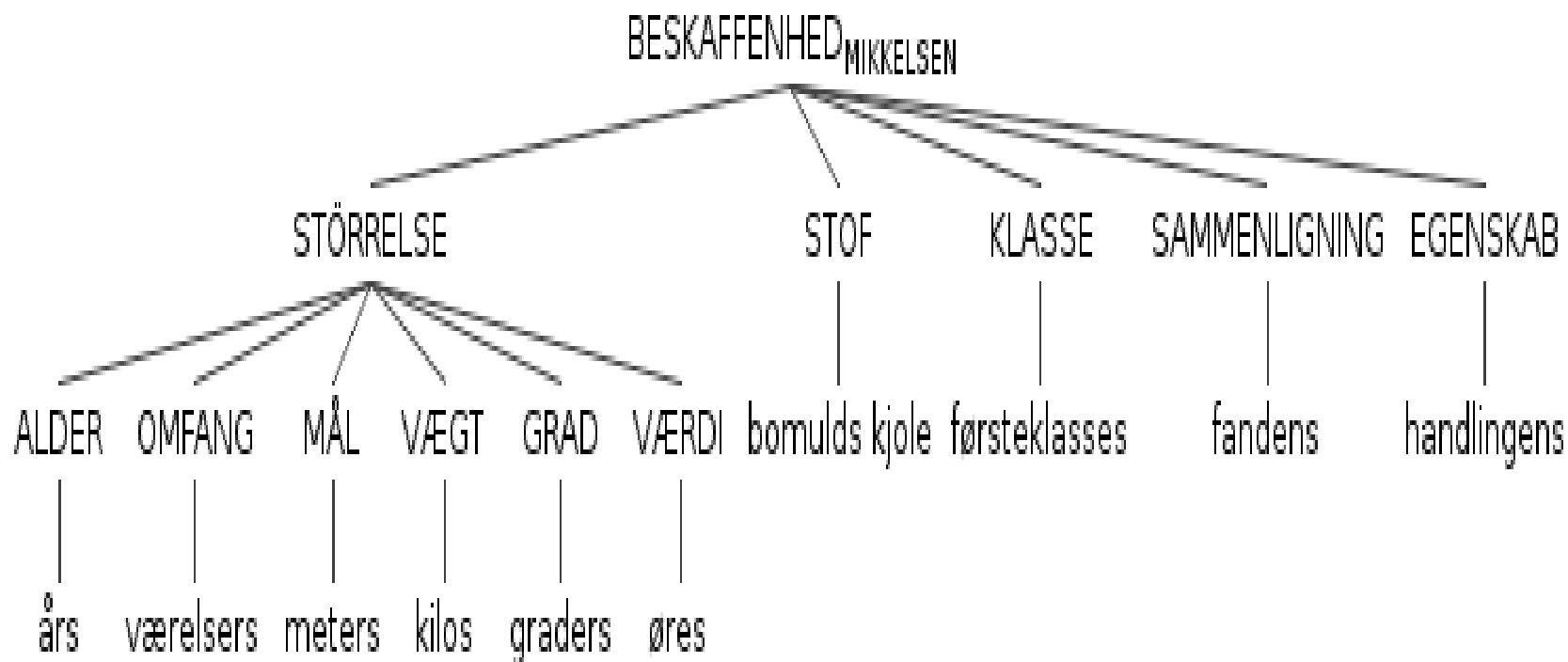


# Goals

- 1) Present the hypothesis that Q-genitives are syntactically equivalent to attributive adjective phrases
- 2) Propose a syntactic structure for Q-genitives in the NP-domain of a DP-structure to formally explicate the hypothesis in 1
- The hypotheses are tested against empirical evidence

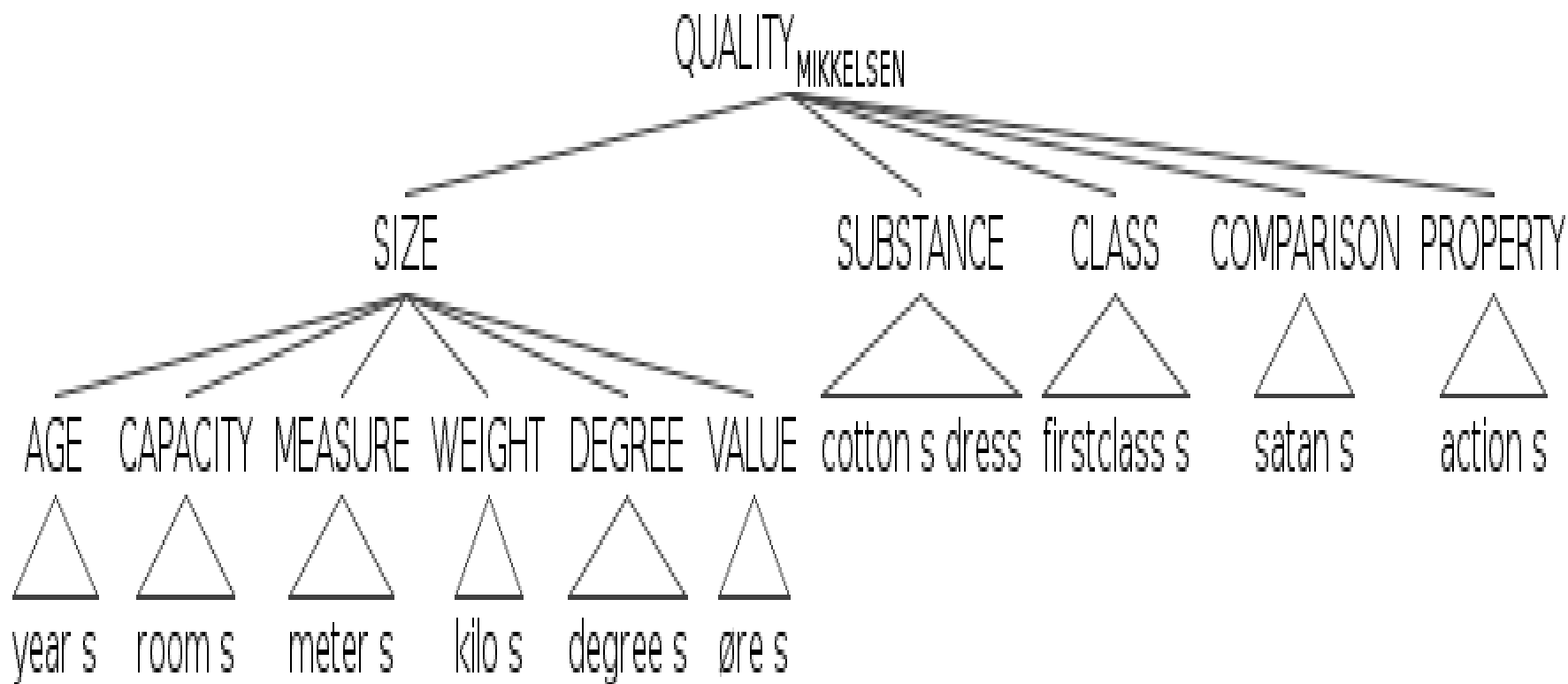
# Insights from earlier treatments

- Kristian Mikkelsen



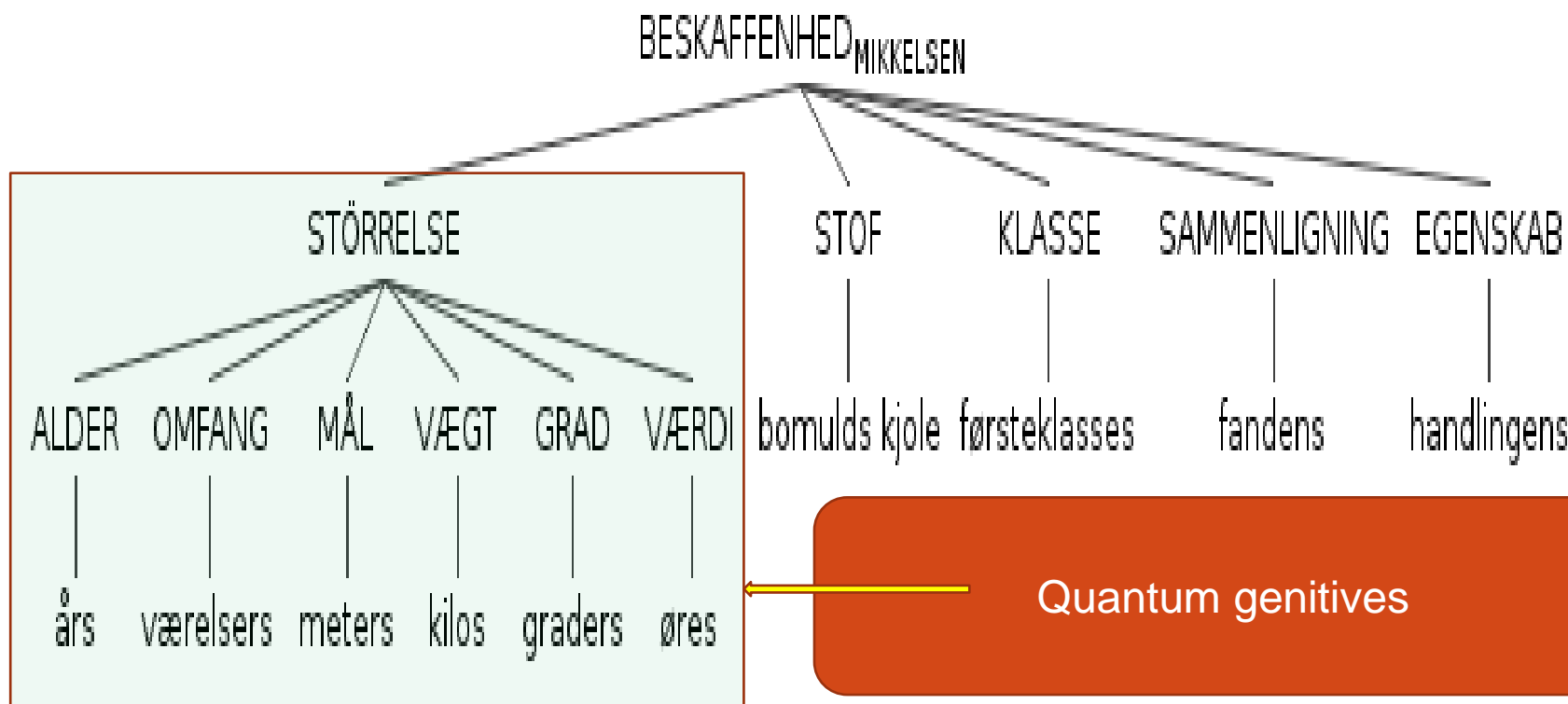
# Insights from earlier treatments

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# Insights from earlier treatments

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# Insights from earlier treatments

- Paul Diderichsen
- Q-genitives are indeed genitives
- Synthetic constructions with unit accentuation:
  - et 'tre ,kilos 'lod (a three kilos' weight)
  - et 'ti ,kroners 'frimærke (a ten kroner's stamp)
  - et 'to mo ,torer s 'fly (a two engines' plane)
- The propensity for unit accentuation is in evidence particularly when the measure expression is realized by a numeral only, but occurs also in examples featuring attributive adjectives between the numeral and the noun head inside the Q-genitive, e.g. 'tre 'barske ,timers sej' lads (three tough hours' sailing)

# Insights from earlier treatments

- Jespersen (1934)
- Jensen (1985)
- Hansen & Heltoft (2011)
- Genitive-s is an enclitic particle
  - i.e., an independent lexical item with its own distinct syntax and semantics

# Insights from earlier treatments

- Hansen & Heltoft (2011); Jespersen (1924)
- Genitive-s is a "rank shifter"
  - A construction involving both a shift of syntactic category and function, and a consequent shift of semantic type

# The syntax of quantum genitives

- A proposal for the syntactic analysis and structure of Q-genitives based on empirical evidence
- The data has been collected primarily from the Danish corpus *KorpusDk* with some supplementary *Google* searches
- I consider the measure noun ***kilometer*** syntactically prototypical for the whole class of Q-genitives



# The syntax of quantum genitives

	English gloss	KorpusDk
1	a geyser of kilometer's size	en geiser på kilometers størrelse
2	some kilometer's interval	nogle kilometers mellemrum
3	only few kilometer's distance	kun få kilometers afstand
4	some 25 kilometer's height	cirka 25 kilometers højde
5	a few kilometer's driving	nogle få kilometers kørsel
6	the next 80 kilometer's driving	de næste 80 kilometers kørsel
7	ten kilometer's <b>safe</b> distance	ti kilometers <b>sikker</b> afstand
	more than 140 kilometer's <b>formidable</b> solo riding	mere end 140 kilometers <b>formidabel</b> solokørsel

# Q-genitives vs. D-genitives

- An attributive adjective following a Q-genitive takes the indefinite form
- An attributive adjective following a D-genitive takes the definite form
- a. 140 kilometer s formidabel (**INDEF**) (\*formidable) kørsel
  - (140 kilometer's formidable/**indef** (\*formidable/**def**) riding)
- b. 15-20 øre s generelt (**INDEF**)(\*generelle) fald i priserne
  - (15-20 øre's general/**indef** (\*general) drop in the prices)

# Q-genitives vs. D-genitives

- Q-genitives may permute with adjacent APs without changing the referential properties of the construction
- a1. (Vi var vidner til) en 140 kilometers formidabel solokørsel
- a2. (Vi var vidner til) en formidabel mere end 140 kilometers solokørsel  
a1. (we witnessed) a 140 kilometer's formidable solo ride)  
a2. (we witnessed) a formidable 140 kilometer's solo ride)
- b1. Et 15-20 øres generelt fald i priserne
- b2. Et generelt 15-20 øres fald i priserne
- c1. en ny 1,5 liters, firecylindret turbodiesel motor med 74 heste
- c2. en ny firecylindret, 1,5 liters turbodiesel motor med 74 heste

# Q-genitives vs. D-genitives

- A similar permutation is impossible with D-genitives, where the referential properties of the construction change radically
- a. en koks skønne suppe  
(a chef's delicious soup)
- b. en skøn koks suppe  
a delicious chef's soup
- this owes to the fact that in D-genitives the preposed AP no longer modifies the same noun as is the case with the Q-genitives, whose complement head nouns do not become modified by a preposed AP. APs and Q-genitives are simply stacked

# A hypothesis of Q-genitives

- These observations support the following hypothesis
  - Syntactically, Quantum genitives are a special type of AP, and they function as attributive, adjectival modifiers

# A hypothesis of Q-genitives

## 1<sup>st</sup> argument

- It follows from the hypothesis that Q-genitives (in contra-distinction to D-genitives) do not affect the definiteness form of adjacent APs
- Q-genitives are definiteness neutral and may therefore be governed wrt definiteness
- In a and b
  - a. **denne** 140 **kilometers formidable** solokørsel (DEF)
  - b. **en** 140 **kilometers formidabel** solokørsel (INDEF)
  - (a'. this 140 kilometer's formidable solo ride)
  - (b'. a 140 kilometer's formidable solo ride)

the articles determine definiteness both for the adjective and for the Q-genitive

# A hypothesis of Q-genitives

## 2<sup>nd</sup> argument

- The hypothesis offers a straightforward explanation of Kristian Mikkelsen's crucial observation concerning Danish possessive pronouns:

"Tillæggsfald af de personlige henvisningsord såvel som *min, din, sin, vor* og *jer* betegner de fleste af de samme sammenhængsforhold, som navneordenes tillæggsfald betegner [...] ... b) **Derimod betegner disse former og ord aldrig en beskaffenhed** ... (1911: 257)

("The genitives of personal pronouns as well as *mine, yours.SG, POSS.REFL, ours, yours.PL* express most of the relations that the genitive forms of nouns do [...] b. **Contrary to this, these forms and words never express a quality** ...")

- This entails that the possessive pronouns share semantic properties with D-genitives, but absolutely not with Q-genitives!
- BECAUSE: The possessive pronouns are pro-forms of D-genitives and therefore belong to an entirely different syntactic category (**GP**), whereas Q-genitives are a special kind of **APs**

# A hypothesis of Q-genitives

- **3<sup>rd</sup> argument**
- Since the hypothesis claims that Q-genitives are a special kind of attributive APs, we would expect them to allow stacking like ordinary APs.
- This prediction is borne out
  - **en skøn tre timers, femten kilometers** vandretur
    - (a wonderful, three hours', fifteen kilometers' hike)
  - **en tres kvadratmeters, to værelses** lejlighed
    - (a sixty square meters', two rooms' apartment)



# A hypothesis of Q-genitives

## 4<sup>th</sup> argument

- Since Q-genitives are APs, they typically cannot function as adverbial specifiers in other APs:
- \*en **to meter s** lang flagstang                      (\*a **two meter's** long flagpole)
- \*en [[to meter s]<sub>AP</sub> lang]<sub>AP</sub> flagstang            (\*a [[**two meter's**]<sub>AP</sub> long]<sub>AP</sub> flagpole)
- Quantified NPs with measure nouns as head may fill this function:
  - en **to meter** lang flagstang                      (a **two meter** long flagpole)
  - en [[to meter]<sub>NP</sub> lang]<sub>AP</sub> flagstang            (a [[**two meter**]<sub>NP</sub> long]<sub>AP</sub> flagpole)
- So, it follows correctly from the hypothesis that Danish offers the choice between the attributive APs in a and b:
  - a. en [**to meter lang**]<sub>AP</sub> flagstang                      (a [**two meter** long]<sub>AP</sub> flagpole)
  - b. en [**to meter s**]<sub>AP</sub> flagstang                      (a [**two meter's**]<sub>AP</sub> flagpole)

# The syntactic structure of Q-genitives

- **Quantum genitive *s*** belongs to the category  **$G_A$** 
  - $G$  = genitive
  - $_A$  = genitive *s* is the head of a maximal projection of the type  **$G_{AP}$** , whose distribution overlaps with that of attributive APs
  - Genitive *s* of category  $G_A$  subcategorizes for a preceding NP with a head of class  $N_M$  (measure nouns) or class  $N_C$  (constitutive nouns)
    - (The distinction between these two noun classes is not relevant for the syntactic structure they project, but is crucial for the distinct semantic interpretations of measure genitives vs. constitutive genitives)

# The syntactic structure of Q-genitives

- The hypothesis of the structure of Q-genitives thus rests on their subcategorization property, which differs from those of D-genitives:

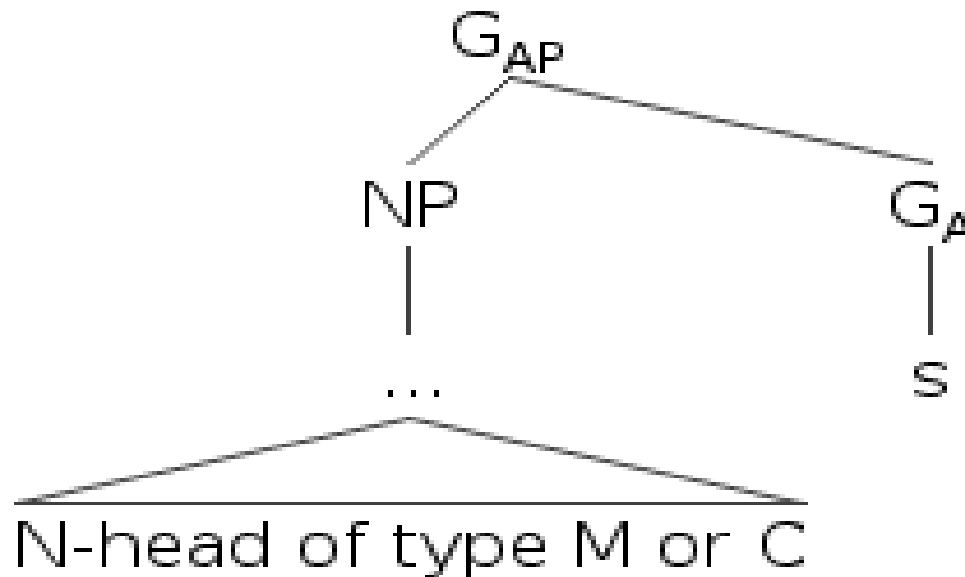
- D-genitive -s requires a DP-complement
- Q-genitive -s requires a DP-complement

→

- It is D-genitive s which prompts the rank shift from nominal function to determiner function
- It is Q-genitive s which prompts the rank shift from nominal function to adjectival modifier function
  - This entails that there has to exist different lexical entries for these two genitive s's

# The syntactic structure of Q-genitives

- The basic syntactic structure for Quantum genitives:



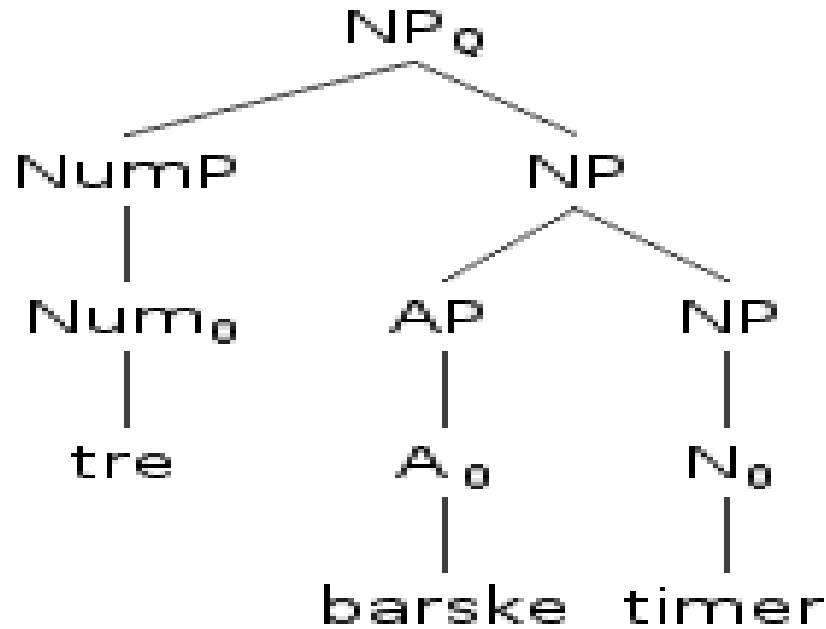
# The syntactic structure of Q-genitives

- In a quantified NP the head may be pre-modified by quantifiers or numerals as well as APs:

<i>mange timer</i>	(many hours)
<i>tre timer</i>	(three hours)
<i>tre barske timer</i>	(three tough hours)

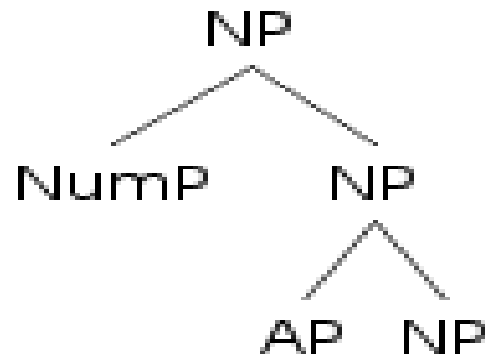
# The syntactic structure of Q-genitives

- This means that we get quantified NP-structures like this one for *tre barske timer* (three tough hours):



# The syntactic structure of Q-genitives

- with NPs embedded recursively inside NPs

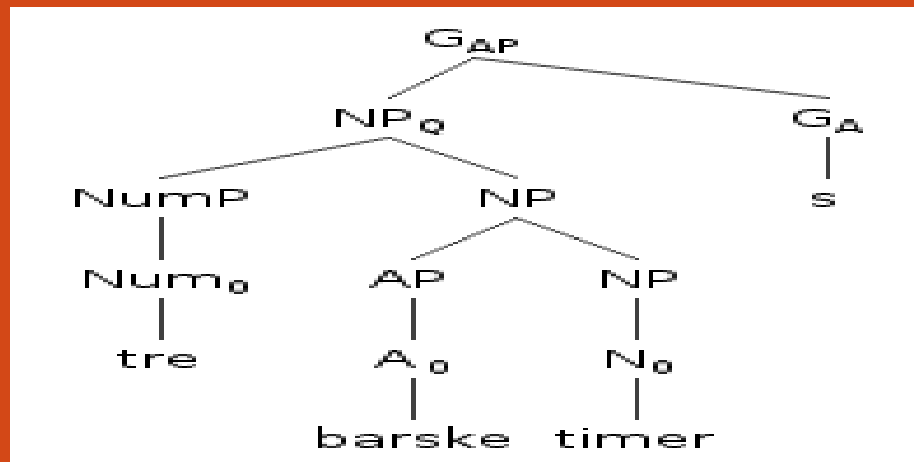


From this structure follows the prediction that both numerals and APs may be stacked, which is borne out by:

- *de* [<sub>NumPs</sub> *to, tre, fire*] [<sub>APs</sub> *søde, beskidte*] *unger på legepladsen*  
(the [two, three, four] [sweet, dirty] kids in the playground)

# The syntactic structure of Q-genitives

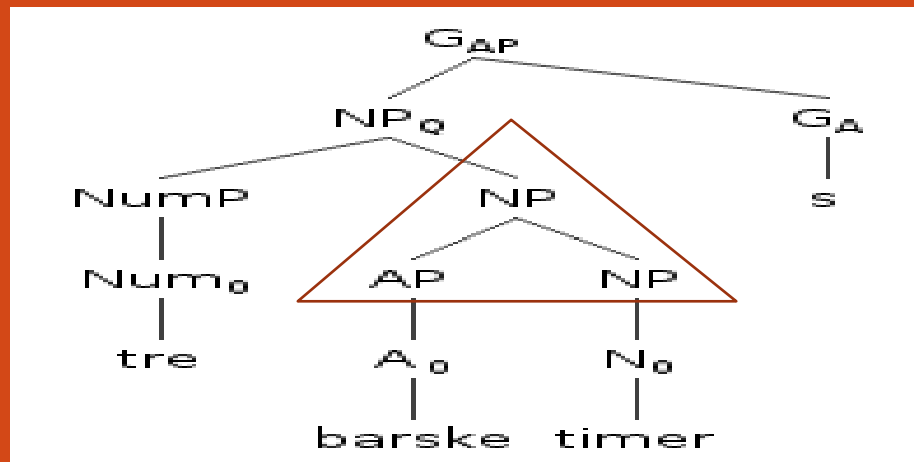
- When *s* is merged with its preceding NP<sub>Q</sub>-complement, we get this structure for the Q-genitive *three tough hours'*, where the *s*-head is projected to a maximal projection of type G<sub>AP</sub>:





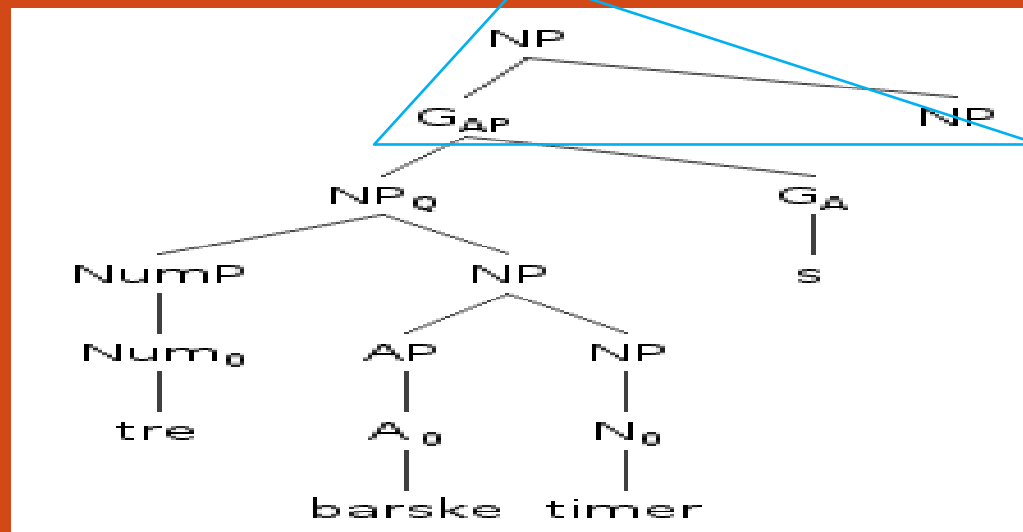
# The syntactic structure of Q-genitives

- Since my hypothesis claims that the maximal  $G_{AP}$  is a kind of AP, it follows that it has to enter the same type of structure as APs, i.e. an adjunction:



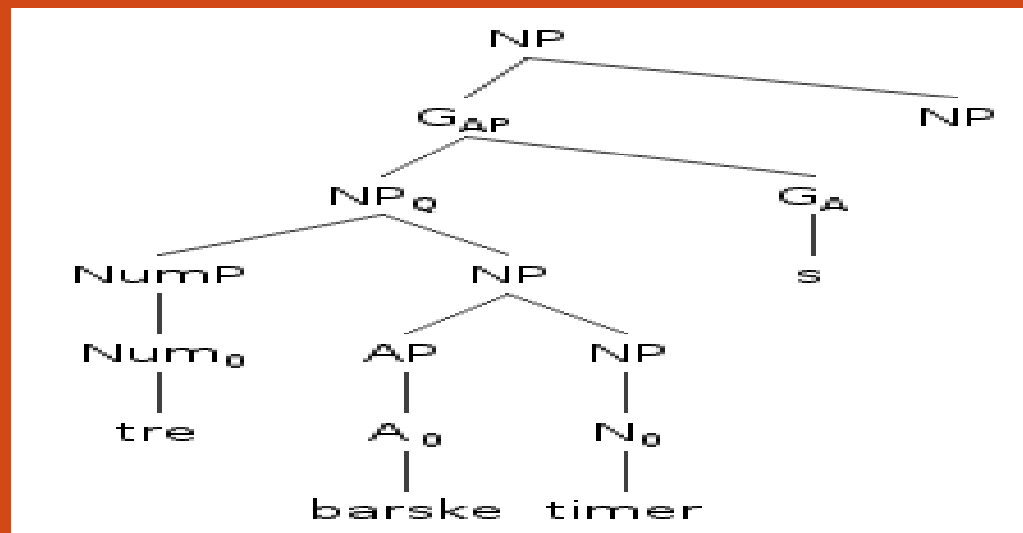
# The syntactic structure of Q-genitives

- Therefore, like APs, the  $G_{AP}$  must form a sister node of an NP which is projected to a mother-NP directly dominating both of these constituents:



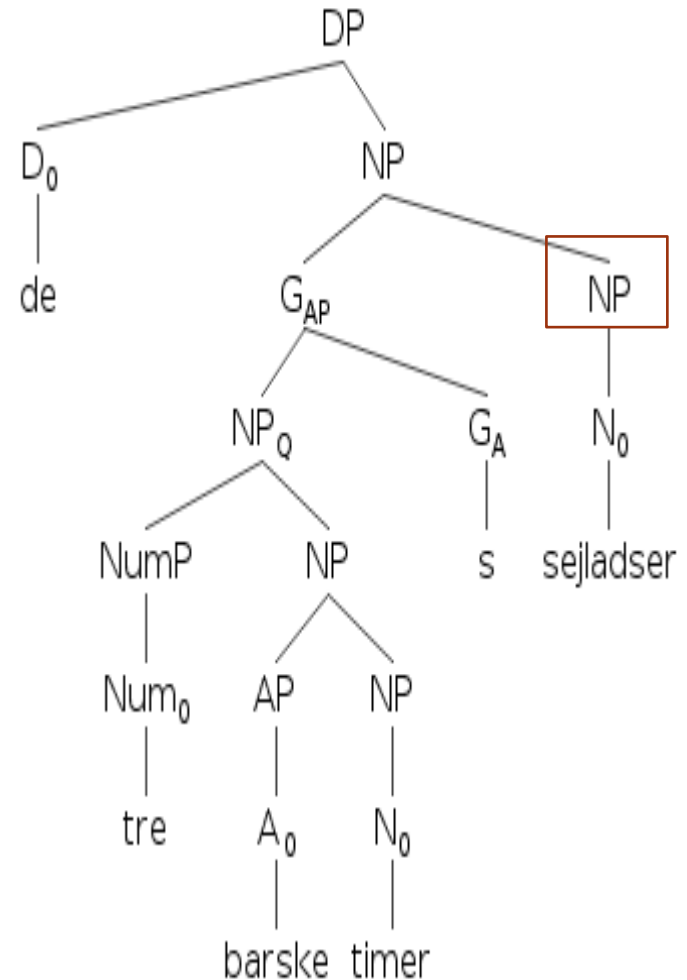
# The syntactic structure of Q-genitives

- This structure thus presupposes a licensing grammar with these three recursive rules:
  - $NP \rightarrow AP\ NP$  (*sweet, dirty kids*)
  - $NP \rightarrow NumP\ NP$  (*two, three, four*)
  - $NP \rightarrow G_{AP}\ NP$  (*three hours', fifteen kilometer's hike*)



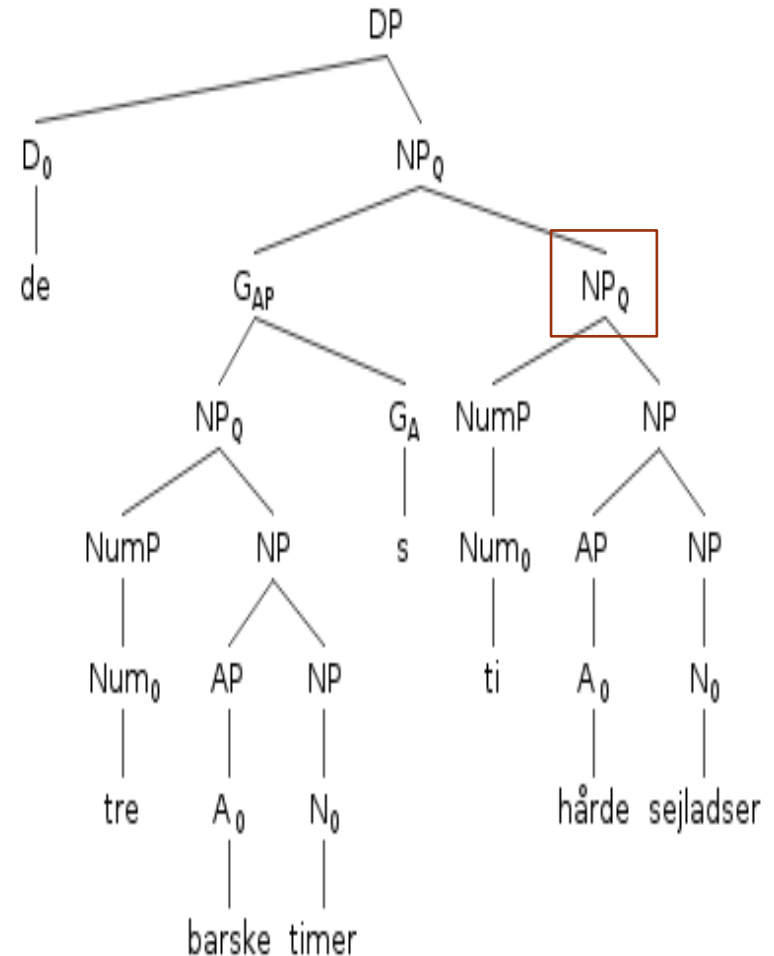
# The syntactic structure of Q-genitives

- The recursive NP-structure in Q-genitives has further consequences
- The rules  
 $NP \rightarrow AP\ NP$  and  
 $NP \rightarrow NumP\ NP$   
predict that also the NP following  $G_{AP}$  may be modified by a Numeral Phrase and an attributive AP, e.g.,
- *de tre barske timers ti hårde sejladser*  
(the three tough hours' ten hard sailings)



# The syntactic structure of Q-genitives

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 (the three tough hours' ten hard sailings)



# The syntactic structure of Q-genitives

- How to analyse the examples showing that Q-genitives can appear both before and after APs?
- a1. en 140 kilometer s, formidabel solokørsel
- a2. en formidabel, 140 kilometer s solokørsel  
(a1. a 140 kilometer's, formidable solo ride)  
(a2. a formidable, 140 kilometer's solo ride)
- b1. Et 15-20 øre s, generelt fald i priserne
- b2. Et generelt, 15-20 øre s fald i priserne
- 
- c1. en 1,5 liter s, firecylindret dieselmotor med 74 heste
- c2. en firecylindret, 1,5 liter s dieselmotor med 74 heste

# The syntactic structure of Q-genitives

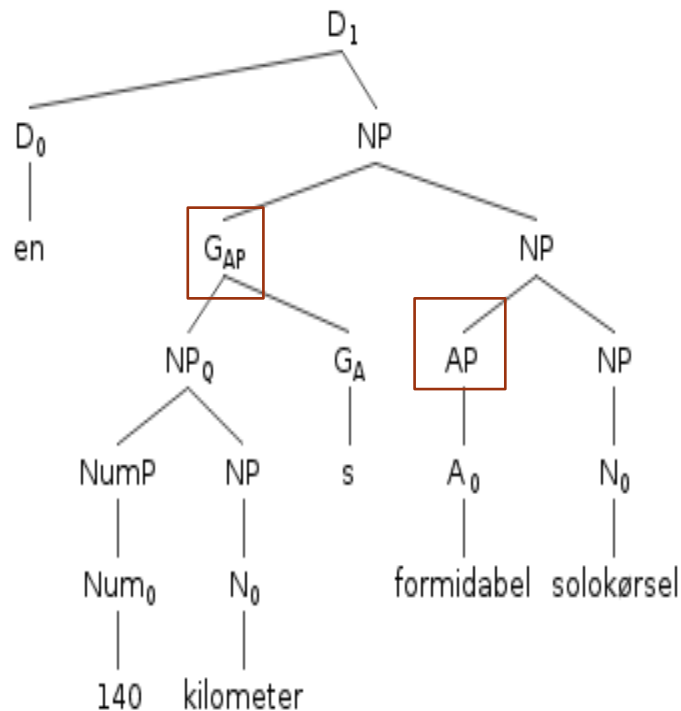
- The explanation:

The rank shift of the nominal NP complement of the Q-genitive *s* to an attributive adnominal  $G_{AP}$  makes possible the permutation with other attributive AP-adjuncts

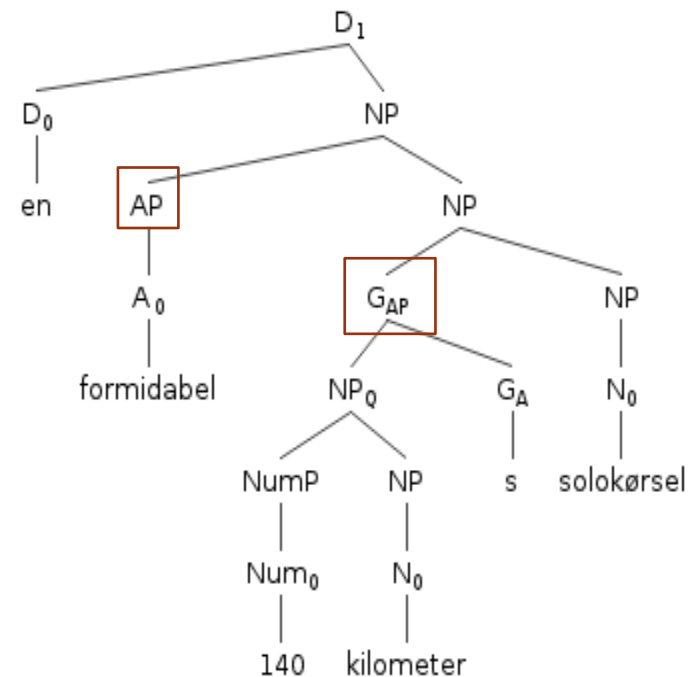
The structures:

# The syntactic structure of Q-genitives

*en 140 kilometers,  
formidabel solokørsel*



*en formidabel , 140  
kilometers solokørsel*

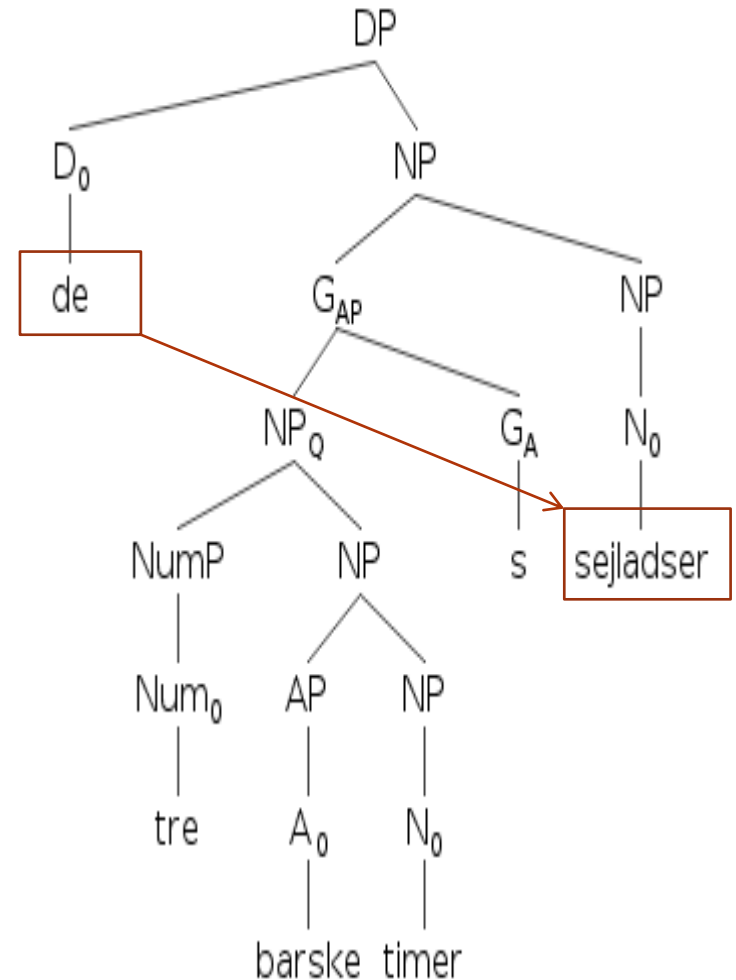




# A Problem

# A problem

- This structure seems to comply with my analysis in that the definite **plural** article **de** agrees with the plural noun head **sejladser**, and Q-genitive s is preceded by its NP-complement.

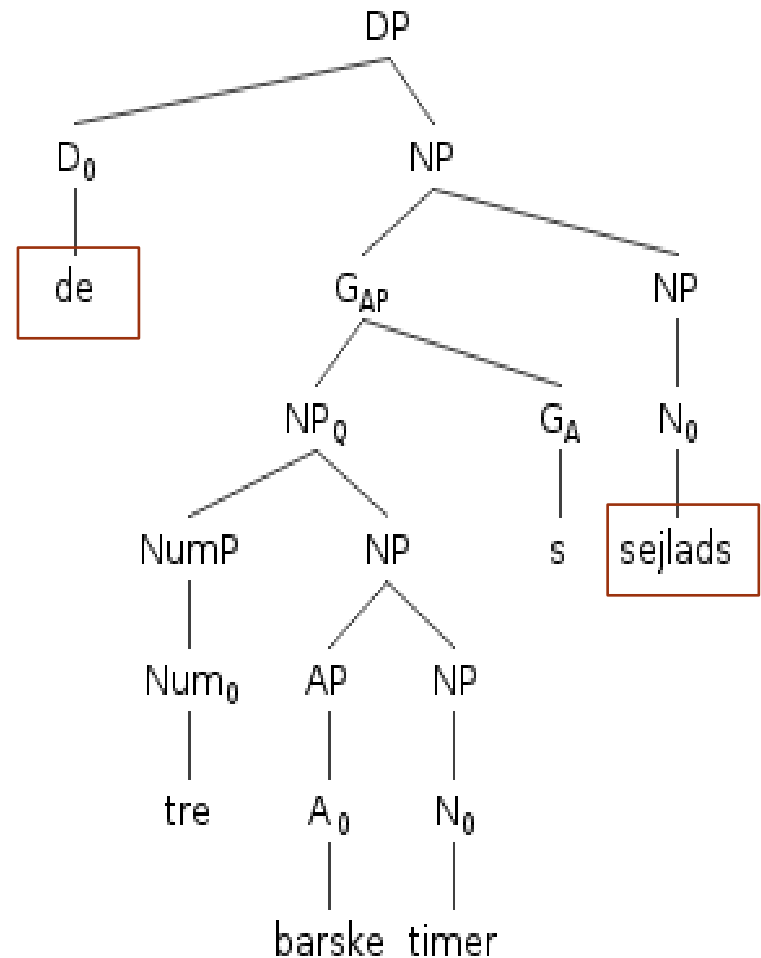


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- the three tough hours' sailings

# A problem

- However, the corresponding DP with a **singular** noun head **sejlads** is perfectly grammatical even with the plural definite article **de** still in place

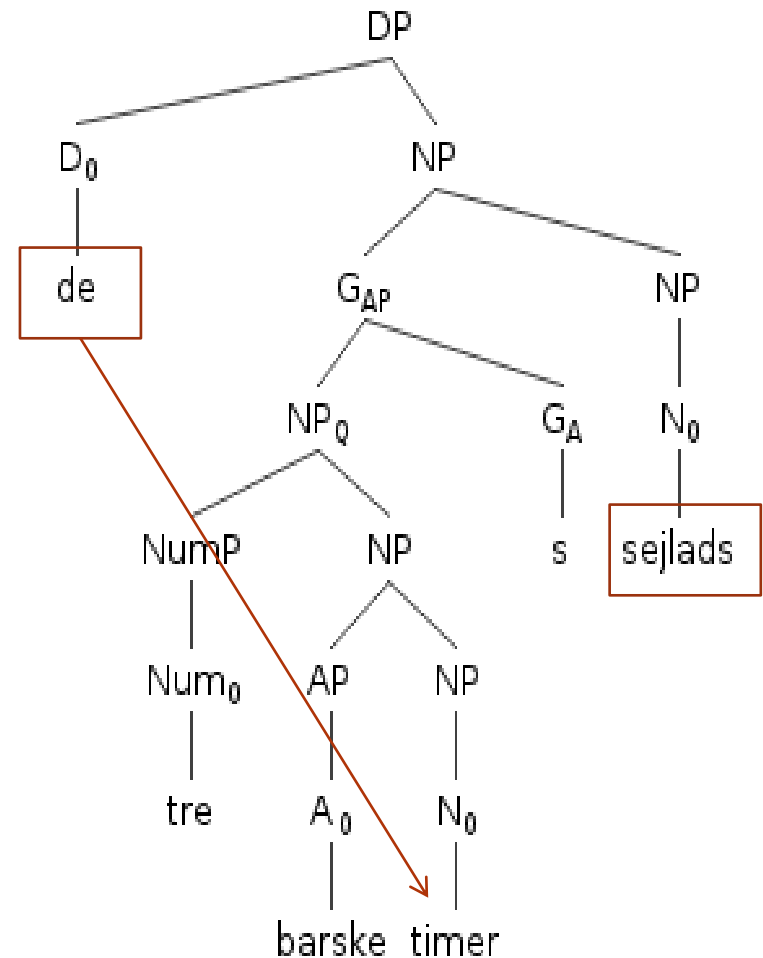


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- the three tough hours' sailing

# A problem

- So, the **problem** is that the definite **plural article** **de** now seems to **agree with the plural noun timer** (hours) rather than with the head noun of the full DP-construction, *sejlads* (sailing)
- If this is the case, Q-genitive s is here preceded by a DP rather than an NP, ... and my **subcategorization claim breaks down!**



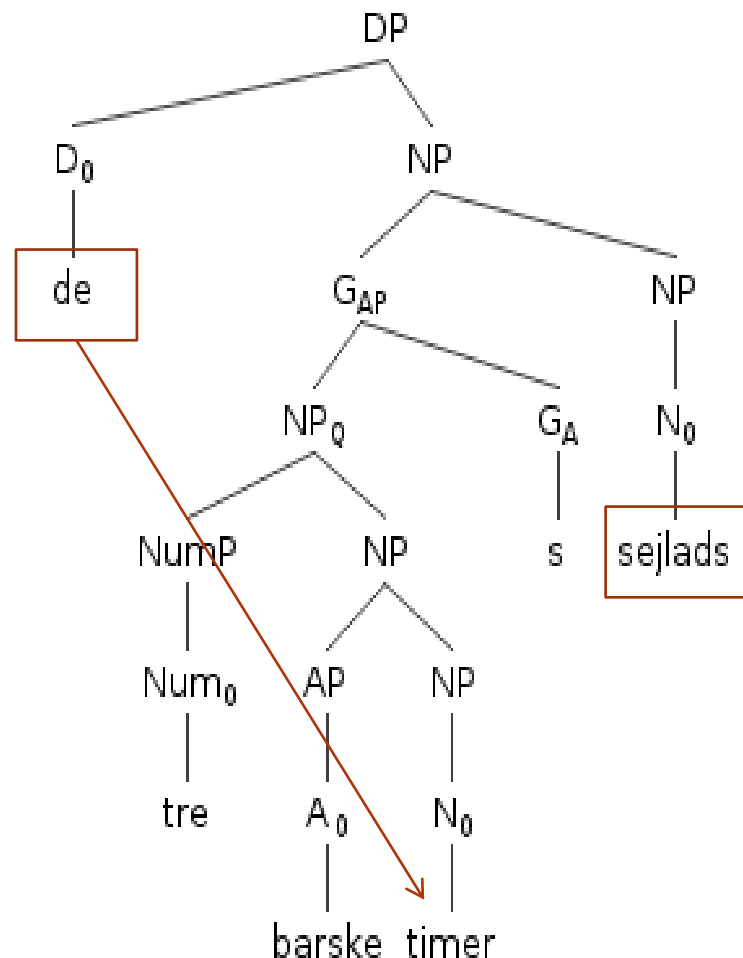
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- (the three tough hours' sailing)

# A solution?

- Diderichsen (1946:241):

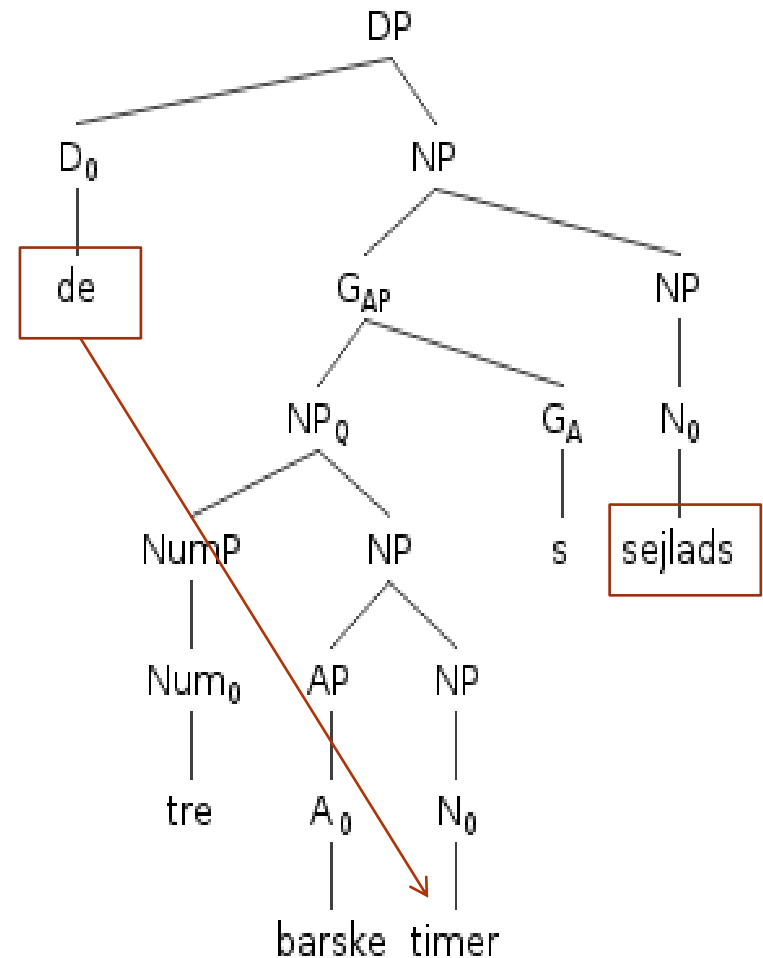
”Mængdehelheder er syntetiske Helheder, som bestaar af et mængdeled, der staar forrest og normalt har Tryktab, og et Artsled, der staar sidst og altid har Fuldtryk. Som regel kan baade Mængdeleddet og Artsleddet indtræde for Helheden *Jeg drak et Glas(/) Vand...* og man kan derfor ikke afgøre hvilket led der er overordnet og hvilket der er underordnet. ...”



# A solution?

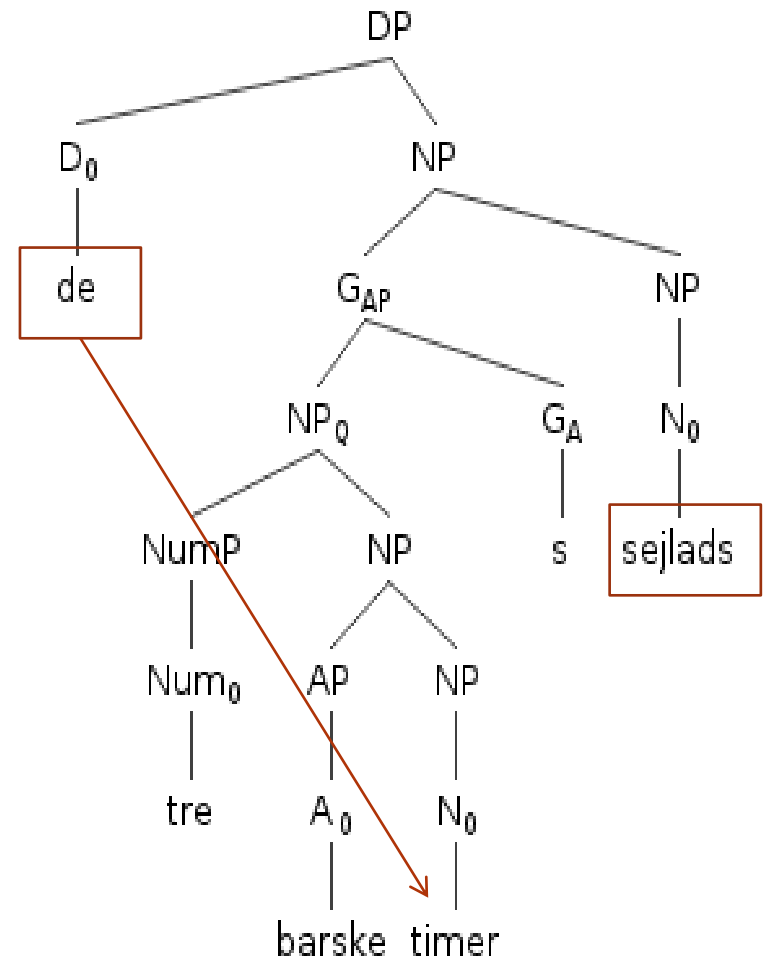
- Diderichsen (1946:241):

”Measure constructions are synthetic constructions which consist of a Measure element, which is placed first and usually has unit accentuation, and a Sortal element which is placed last and always is fully accentuated. As a rule both the Quantum element and the Sortal Element may substitute for the full construction *I drank a glass/water ...* and it is therefore not possible to determine which element is superordinate and which is subordinate.”



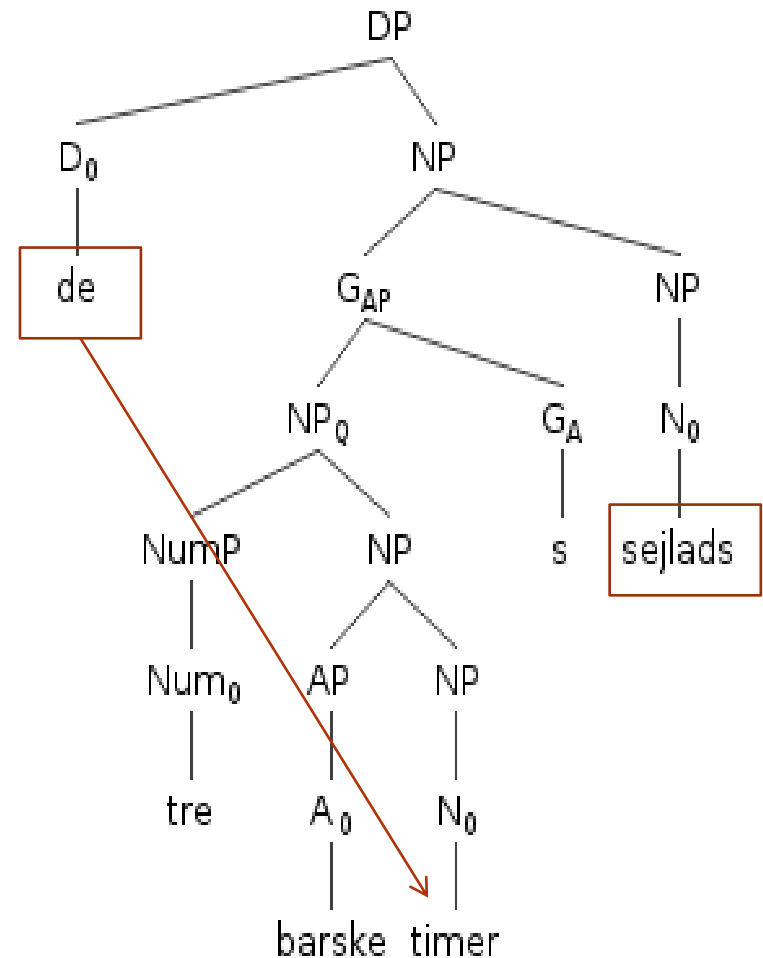
# A solution?

- Quantum genitive constructions follow the unit accentuation + full stress pattern of Diderichsen's measure constructions exactly



# A solution?

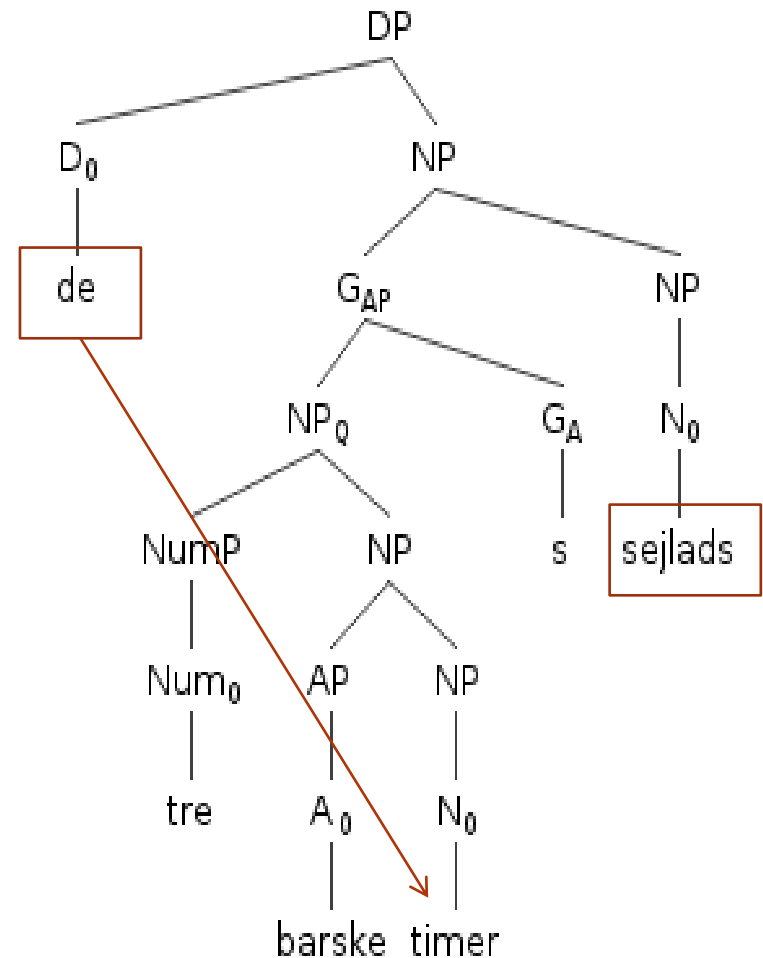
- It is also possible to make an elimination test for Q-genitives parallel to the one Diderichsen proposes for Measure constructions,
- Bo fangede en 2-kilos laks
- Bo fangede en laks
- Bo fangede en 2-kilos





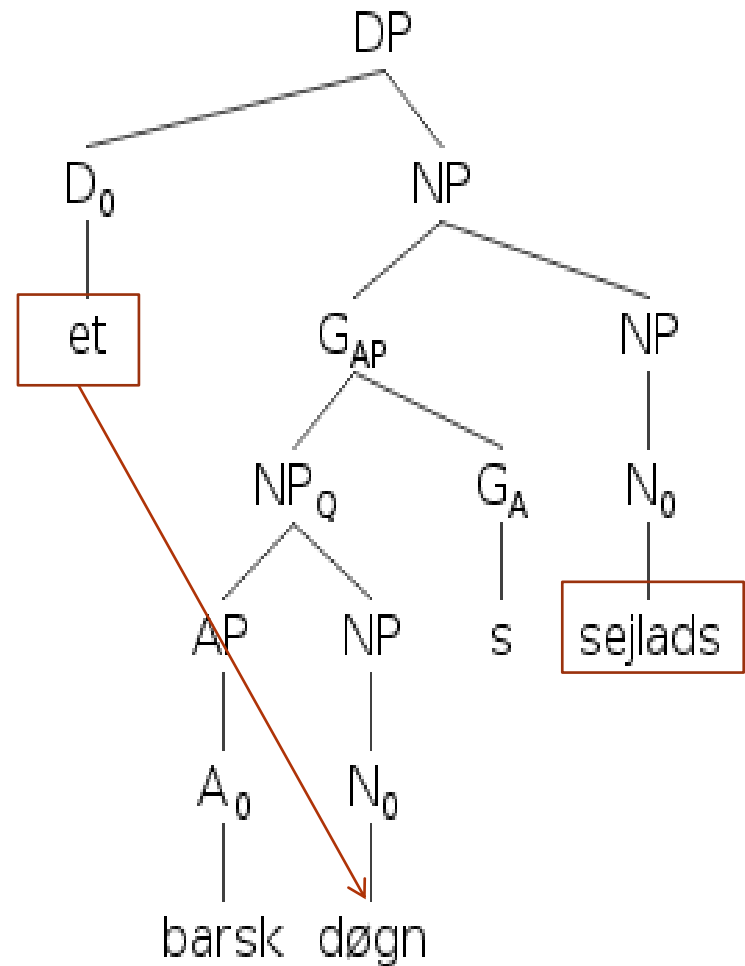
# A solution?

- Based on those facts, I suggest that we have a case of **trigger-happy agreement** in that
- the article agrees with the nearest possible controller which is topicworthy, ie, the duration is coded as more important than the sailing in this construction
- (cf. Comrie 2003)



# A solution?

- **Trigger-happy agreement** may also apply where **gender** is involved, eg,
- Et barsk døgn s sejlads  
(a tough 24 hour's sailing)



# D-genitives and Q-genitives in a Clausal Perspective

# D-genitives and Q-genitives in a clausal perspective

- D-genitives may enter nominal constructions turning a propositional content into a concept, cf. subjective and objective genitives:

## Subjective

Kim udarbejdede rapporten

Kim drafted the report

**Kims** udarbejdelse af rapporten

Kim's draft of the report

## Objective

Kim udarbejdede rapporten

Kim drafted the report

**Rapportens** udarbejdelse

The report's draft

# D-genitives and Q-genitives in a clausal perspective

- Q-genitives cannot do this because **measure expressions in clauses cannot assume the functions of subject and object**

Kim kastede **20 meter**

\***20 meter** blev kastet

Der blev kastet 20 meter

Kims **20 meters** kast

Kim threw 20 meters

20 meters were thrown

There was thrown 20 meters

Kim's 20 meters' throw

Kim forelæste **i 20 minutter**

Kims **20 minutters** forelæsning

Kim lectured for 20 minutes

Kim's 20 minutes' lecture

# D-genitives and Q-genitives in a clausal perspective

- So, my proposal that the Q-genitives are constructions composed of NP+s ending up as adjectival  $G_{AP}$ s on the clausal level seems to correspond to having a VP modified by a DP, NP or PP adjunct
- That is, Q-genitives do not reach the specifier level, but are modifiers further down in the structure

# D-genitives and Q-genitives in a clausal perspective

- But there is probably more to this story ...
- In particular, recall Mikkelsen's seminal observation (Mikkelsen 1911: 241),
- "The genitives of personal pronouns as well as *mine, yours.SG, POSS.REFL, ours, yours.PL* express most of the relations that the genitive forms of nouns do [...] b. **Contrary to this, these forms and words never express a quality ...**"

# D-genitives and Q-genitives in a clausal perspective

- Apart from the reflexive *sin*, all of these pronouns may assume the clausal functions of subject and object
- The fact that these same pronouns cannot express the notional categories of the Q-genitives adds an interesting semantic perspective to the fact that Q-genitives cannot assume major clausal grammatical functions like subject and object
- So, what Q-genitives express is different from the usual denotations of subjects and objects



# D-genitives and Q-genitives in a clausal perspective

- So, what do Q-genitives express?

Consider an English example of the relation between adjectival semantics and clausal functions:

- a criminal lawyer

is semantically ambiguous between descriptive and classifying. In the former case, we have a corresponding predicative construction, ie, a subject complement

- the lawyer is criminal

In the latter case we have **no corresponding predicative construction**

# D-genitives and Q-genitives in a clausal perspective

- Q-genitives, despite their adjectival properties, do **not have corresponding predicative constructions**

a. En syv kilo s laks                      a seven kilo's salmon

b. \*Laksen er syv kilos                      \*the salmon is seven kilo's

Therefore, their semantics seems more related to that of **classifying adjectives** or **adjectival modifiers as first element of compounds** than to purely descriptive adjectives

# D-genitives and Q-genitives in a clausal perspective

- This, in turn, sometimes influences their position relative to purely descriptive APs in that they tend to occur closer to the N-head than a descriptive AP:

En rummelig to værelser s lejlighed >

En to værelser s rummelig lejlighed

(a spacious two rooms' apartment)

'>' = "sounds more natural than"

- This concludes my remarks on Q-genitives and clausal functions.

# Summary

- I have
  - analyzed constructions with Quantum genitives like ***kilometers vandring*** (**kilometer's** hiking), ***et ti timers kursus*** (a **ten hours'** course), and ***et to motorers fly*** (a **two engines'** plane)
  - argued on an empirical basis in favour of a hypothesis that Quantum genitives are syntactically equivalent to attributive APs
  - argued for a phrase structure of Quantum genitives accounting for their possible syntactic positions in relation to Numeral Phrases and APs in the NP-domain of a DP- structure

# Summary

- I have
  - tried to fight off an empirical problem for the subcategorization hypothesis by appealing to trigger-happy agreement
  - sketched a syntactic and partly semantic explanation why Q-genitives cannot assume the sentential functions of subject and object or even subject complement, despite their basically adjectival nature

Thank you!

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