<p align="center">**A functional-typological account of NP-clause parallels**
SLE 2012 (University of Stockholm, Sweden, 31 August 2012)
J. Rijkhoff (Aarhus University, Denmark)</p>

1. Preliminaries

- <u>Subject</u>: similarities between *SEMANTIC REPRESENTATIONS* of NP and clause (often iconically reflected in morphology and syntax); 'symmetry model' developed within theory of F(D)G.
- <u>Main point</u>: the same five FUNCTIONAL MODIFIER CATEGORIES can be used to analyze NPs and clauses (e.g. Rijkhoff 2008a, 2008c, 2009): (i) CLASSIFYING MODIFIERS, (ii) QUALIFYING MODIFIERS, (iii) QUANTIFYING MODIFIERS, (iv) LOCALIZING or ANCHORING MODIFIERS, and (v) DISCOURSE-REFERENTIAL MODIFIERS (on ATTITUDINAL MODIFICATION, see e.g. Rijkhoff 2010).
- <u>Method</u>: combination of theory-driven data collection and data-driven hypothesis formation.

☞ - 'functional': as already intended by Prague School linguists, who were "seeking to understand what jobs the various components were doing […]" (Sampson 1980: 104).
  - 'typological': model based on a data from a representative 50-lge. sample of the world's languages (Rijkhoff et al. 1993; Rijkhoff & Bakker 1998).
☞ Modifier categories include both grammatical and lexical modifiers; they cover all 'dependents' that are not arguments or complements.
☞ Modifiers are distributed over 'nested' layers around the head constituent, reflecting differences in SEMANTIC SCOPE. Conventionally, grammatical modifier categories ('operators') like *Demonstratives* or *Tense* (both: LOCALIZING/ANCHORING MODIFIERS) are represented **on the left**, whereas lexical modifiers ('satellites'), such as adjectives, adverb(ial)s, PPs or relative clauses, are represented **on the right**.
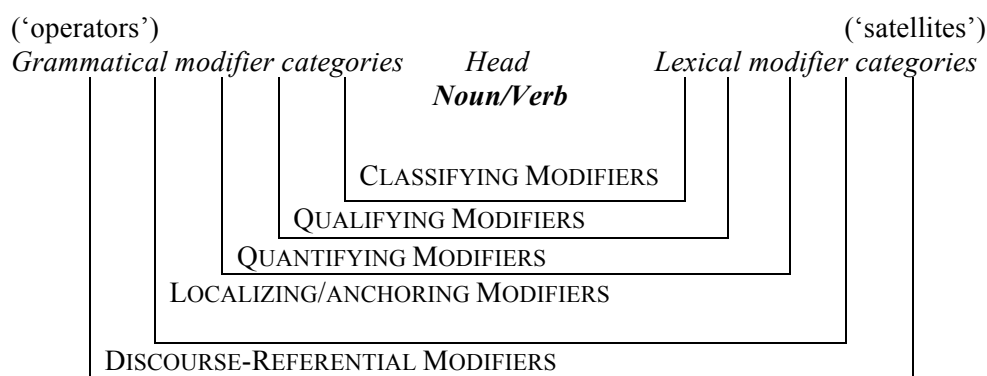

Figure 1. Functional modifier categories in a layered representation of NP/clause structure.

- clauses have at least two more layers of modification (accommodating propositional modifiers and illocutionary modifiers; see Appendix 1);
- NP structure developed on the basis of NPs that are used to refer to FIRST ORDER (SPATIAL) ENTITIES (concrete objects or 'things'; so no nominalizations, for example).

☞ CLASSIFYING MODIFIERS further specify 'what kind it is', QUALIFYING MODIFIERS 'how it is', QUANTIFYING MODIFIERS 'how many or how much it is', LOCALIZING OR 'ANCHORING' MODIFIERS 'where it is' (more on 'anchoring' below), and DISCOURSE-REFERENTIAL MODIFIERS 'that it is' (i.e. whether or not the entity has an identifiable place in the World of Discourse). Cf. Aristotle (*Physics* V:II), who wrote that movement or change "*pertain[s] exclusively to quality, quantity, and location, each of which embraces contrasts*".

☞ There is **<u>no</u>** one-to-one relation between **form** and **function**: the same linguistic form or construction can often be used in more than one function, and vice versa, different linguistic forms or constructions can be used in the same modifier function (in the same 'act of modification' – Rijkhoff 2014).

Table 1 shows that members of various formal categories (e.g. adjectives, PPs, relative clauses) can all be used as a QUALIFYING MODIFIER.

Same function (QUALIFYING MODIFIER), different forms (members of different formal categories):

FUNCTIONAL CATEGORY: QUALIFYING MODIFIER (in NP)			
SEMANTIC CATEGORIES:	FORMAL CATEGORIES:		
	ADJECTIVE	PREPOSITIONAL PHRASE	REL. CLAUSE ...
Size	*big N*	*N of enormous size*	*N that was rather big*
Value / Quality	*expensive N*	*N of great value*	*...*
Age	*young N*	*N under age 16*	*...*
Color	*red N*	*...*	*...*

Table 1. Some formal (and semantic) subcategories of the functional category 'QUALIFYING MODIFIER' (**in the NP**).

Table 2 shows that members of the same formal category (here: Dutch adnominal PPs with *van* 'of) can be used in different modifier functions:

Same form (ADNOMINAL PP WITH *VAN* 'OF'), different functions (different acts of Modification):

ADNOMINAL POSSESSIVES WITH *VAN* 'OF'	MODIFICATION (PP can be internally modified)	PREDICATION (PP can be 'used as a predicate)	REFERENCE (NP in PP can be used referentially)
LOCALIZING / ANCHORING *de fiets van mijn vader* 'the bike of my father'	*de fiets van mijn (oude) vader* 'the bike of my (old) father'	*die fiets is van mijn (oude) vader* the bike is of my (old) father 'the bike belongs to my (old) father'	*de fiets van **Peters** vader* 'the bike of Peter's father' (REFERENCE TO AN ENTITY)
QUALIFYING B+ *beelden van **grote** kwaliteit* 'statues of **great** quality'	*beelden van **grote** kwaliteit* 'statues of high quality'	*de beelden **zijn** van verschillende kwaliteit* 'the statues are of varying quality'	*beelden van **deze** kwaliteit* 'statues of this quality' (REFERENCE TO *A PROPERTY OF AN ENTITY*)
QUALIFYING B *een kroon van goud* 'a crown of gold'	*een kroon van (**zuiver**) goud* 'a crown of (pure) gold'	*de kroon **is** van (zuiver) goud* the crown is of (pure) gold 'the crown is made of (pure) gold'	—
QUALIFYING A+ *een man van **vele** gezichten* 'a man of **many** faces'	*een man van **vele** gezichten* 'a man of many faces'	—	—
QUALIFYING A *een man van gezag* 'a man of authority'	*een man van (**groot**) gezag* 'a man of (great) authority' (SEE SECTION 4.1)	—	—
CLASSIFYING *een man van de wereld* 'a man of the world'	—	—	—

Table 2. Modifier functions of adnominal (possessive) PPs with 'van' in Dutch (Rijkhoff 2009: 90). (see also Appendix 2 on scope increase/decrease)

The five shared NP/clause modifier categories (*Fig.* 1) are exemplified below, followed by synchronic and diachronic evidence for the 'symmetry model' (examples from languages across the globe). Finally, a tentative explanation is proposed for symmetry in the semantic representations of linguistic expressions that are used to refer to 'things' and 'events'.

2. Examples of the various modifier categories

2.1. Classifying modifiers further specify ('sub-classify') the KIND of entity that is denoted by the head constituent.

☞ **Classifying modifiers in the noun phrase**

The semantic range of classifying modifiers in the NP (e.g. adjectives, non-referential genitives; also nominal aspect markers – Rijkhoff 2004a: 100-121) is rather broad and may include such categories as material, purpose and function, status and rank, origin, and mode of operation (Halliday and Matthiessen 2004: 320; Mezhevich 2002: 104-105). Essentially they relate to any feature that may serve to classify entities into a system of smaller sets.

(1)   a. *a **corporate** lawyer*   b. ***parental** rights*   c. *a **dog's** tail*[1]   d. *a house **of sin***

(2)   a. *zamoch-n-aja   skvazhina*   b. *knizh-n-yj   magazin*
          lock-ADJ-INFL hole   book-ADJ-INFL store
          'a/the keyhole'   'a/the bookstore' (Russian; Mezhevich 2002: 97, 105)

Classifying ('relational') adjectives typically have grammatical properties that set them apart from *qualifying adjectives*. For example, *classifying adjectives* usually do not admit intensifiers, comparison, or predicative position (Quirk et al. 1985: 1339;):[2]

(3)   *a musical instrument*   vs.   * *a very musical instrument*   [intensifier]
(4)   *a corporate lawyer*   vs.   * *a more corporate lawyer*   [comparison]
(5)   *the departmental meeting* vs.   * *the meeting is departmental*   [predicative position]

Also, a classifying adjective cannot be conjoined with a qualifying adjective and is normally adjacent to the head noun:

(6)   *a rich and friendly lawyer*   vs.   * *a rich and **corporate** lawyer*
(7)   a*n expensive **musical** instrument* vs.   * *a **musical** expensive instrument*

NOMINAL ASPECT MARKERS are grammatical elements that modify the *Seinsart* ('mode of being') of a noun: the way the nominal property is projected in the spatial dimension in terms of the features Shape and Homogeneity (Rijkhoff 2004a: 100–121; 2008b). For example, many nouns in Oromo are lexically coded for a *Seinsart* called "set noun" (i.e. transnumeral 'count' nouns that can be in direct construction with a numeral).

Oromo: set noun (Stroomer 1987: 59, 107)
(8)a. *gaala   lamaani*   b. *gaala   lamaani   sookoo   d'ak'-e*
        camel(s)   two   camel(s)   two   market   go-3SG.M.PAST
        'two camels'   'Two camels went to the market'

When a set noun is provided with a collective or individual aspect marker, it designates a special KIND of set, viz. a *collective set* or a *singleton set* (with just one member) respectively:

(9)   a. *farad* 'horse/horses' (unmarked set)   vs.   *fardoollee* 'horses' (collective set)
        b. *nama* 'man/men' (unmarked set)   vs.   *namica* 'a/the man' (singleton set)
            (Oromo; Stroomer 1987: 76–77, 84–85)

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[1] Example (3c) is ambiguous, meaning either 'the tail of an unidentified canine' (possessive) or 'a particular kind of tail' (classifying).
[2] On non-predicative adjectives, see also e.g. Bolinger 1967, Farsi 1968, Levi 1973. See also, for example, McNally and Boleda 2004, Fábregas 2007, Rutkowski 2007.

☞ **Classifying modifiers in the clause**

- **"Stripped nouns"** (Miner 1986, 1989; Gerds 1998): whereas an incorporated element is part of another word, a stripped noun is a separate word (according to phonological criteria such as stress placement), which must appear next to the verb. In Kusaiean adverbs can appear between verb and object (42a), but not between verb and stripped noun (42b).

Kusaiean (Gerds 1998: 94; original example in K. Lee 1975)

(10) a. *Sah   el   twem   upac   mitmit   sac*
         Sah   he   sharpen   diligently   knife   the
         'Sah is sharpening the knife diligently'

Stripped noun:

(10) b. *Sah   el   twetwe   mitmit   upac*
         Sah   he   sharpen   knife   diligently
         'Sah is diligently knife-sharpening'

The crucial difference is that in the case of a stripped noun we are dealing with a more or less independent element that serves as a classifying satellite in the clause.

- **Verbal aspect markers** (classifying operators) specify what KIND of event is being referred to, indicating for example, that an event is bounded (perfective) or open-ended (imperfective). They specify the way the verbal property is projected in the temporal dimension in terms of the features Beginning and Ending.

<u>Hungarian</u> (Judit Horváth, personal communication)

(11) a. *el-olvastam   az   újság-ot*   b. *olvastam   az   újság-ot*
        PERF-read-I the   paper-ACC   [IMP]read-I   the   paper-ACC
        'I read the paper' (from beginning to end)   'I was reading the paper'

2.2. Qualifying modifiers are used to specify more or less inherent properties of an entity.

☞ **Qualifying modifiers in the noun phrase**

Qualities (e.g. dimension, age, value or color, also physical property, human propensity or speed; cf. Dixon 1982) are often expressed by (qualifying) adjectives, but in languages that do not have a distinct class of adjectives, verbal or nominal forms (stative verbs, abstract nouns) are typically used to express 'adjectival' notions.[3] Speakers of Eastern Ojibwa (North-America) and Kwaza (South-America) must use verbal roots to express adjectival properties such '(be) tall' or '(be) ripe'.

(12)   *nini   e-gnoozi-d*
        man   REL.PX-tall-3SG
        'a tall man' (Eastern Ojibwa; Dryer 2008)

(13)   *'manka 'ki-hỹ   ja-da-ki*
        mango   ripe-NMZ   eat-1SG-DECL
        'I ate a ripe mango' (Kwaza; van der Voort 2004: 94)

Speakers of the Papuan language Galela employ participles (formed by reduplicating the first

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[3] Languages do not necessarily share the same set of SEMANTIC CATEGORIES either. For example, Everett (2005: 627-628) claims that there are no dedicated color terms in the South-American language Pirahã (see also Dixon 1982 on the absence of certain 'adjectival' categories in specific languages).

syllable of the verb):

(14) a.   o   tahu   ḋa lòha   b. *o*   *tahu*   *ḋa lo-lòha*
       ART house   3   be_beautiful   ART   house   3   RED-be_beautiful
       'the house is beautiful'   'the beautiful house'
       (Galela; van Baarda 1908: 36)

Modifiers in Hausa (a Chadic language) "are commonly expressed by use of *mài/màasú* 'owner, possessor of (SG/PL) plus an abstract qualitative nominal" (see also e.g. Banti (1988: 223) on the expression of adjectives notions in Somali, another Chadic language):

(15)   *ríijìyáa*   *mài*   *zúrfii*
       well   'owner, possessor of'   depth
       'a deep well' (Hausa; Newman1987: 721)

☞ **Qualifying modifiers in the clause**
Lexical forms and constructions expressing qualitative properties of an event are, for example, adverbs of manner or speed ('qualifying satellites').

(16)   *She read the paper QUICKLY.*

2.3. Quantifying modifiers specify QUANTITATIVE PROPERTIES (quantity, Sg/Pl number, cardinality) of an entity.

☞ **Quantifying modifiers in the noun phrase**

(17) a. *twee tafel-s* (Dutch)   b. *weinig*   *mens-en* (Dutch)
         two   table-PL   few   person-PL
         'two tables'   'few people'

Jarawara, an Arauan language spoken in Amazonia (Brazil), is one of the languages in which cardinality is expressed by a verbal form. The root *–fama-'* 'be a pair, be a couple (with)' has taken on the additional sense 'be two' (Dixon 2004: 559).[4] In Urarina, spoken in the Peruvian Amazon basin, the native numerals from 1 to 5 are also verbal elements, which have to appear with a nominalizing suffix (for more examples, see e.g. Krasnoukhova 2012: 113f.):

(18) *nitҫataha-j*   *fwanara*
      three-NMZ   banana
      'three bananas' (Urarina; Olawsky 2006: 277)

In Krongo numerals are also categorized as VERBS, which appear in the imperfective when they modify a noun:

Krongo (Reh 1985: 252)
(19)   *nóo-còorì*   **nk-óotòonò**
       PL-house   CN.PL-IMPF:be_three
       'three houses'

☞ **Quantifying modifiers in the clause**
Quantifying satellites are lexical expressions that specify how often an event occurs, as in:

(20)   *EVERY ONCE IN A WHILE our cat catches a mouse.*

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[4] But cf. Everett 2012.

Grammatical means (quantifying operators) to indicate how often an event takes place:
SEMELFACTIVE ASPECT; ITERATIVE, REPETITIVE, or FREQUENTATIVE ASPECT (sometimes subsumed under the label PLURACTIONAL; Newman 1990).

Hidatsa (Matthews 1965: 158)
(21)   *Wí   i   hírawe   ksa   C*
       woman she   sleep   INGR   ITER
       'The woman kept falling asleep'

2.4. Localizing/Anchoring modifiers help addressees in their attempt to locate (and thus: identify) the referent of the matrix NP in the world of discourse by providing them with a referential anchor.[5]

☞ **Localizing/Anchoring modifiers in the noun phrase**
Members of various formal categories can be used for this purpose, such as adnominal demonstratives, possessor phrases, adpositional phrases or relative clauses (the synchronic and diachronic relation between location, possession and existence has been investigated by various authors; see e.g. Christie 1970, Clark 1970, 1978, Lyons 1967).

> *In localizing/anchoring acts of modification, the referent of the matrix NP (e.g. 'the man' in 'the man with the black hat') is identified by establishing a link between the referent of the matrix NP and a referential anchor (hence: 'anchoring modifier'), which itself must always be an entity that is identifiable on the basis of contextual clues. In the case of a deictic demonstrative the referential anchor is an object in the physical world; in the case of a phrasal modifier (e.g. a possessor phrase or a relative clause) the referential anchor is contained in the modifying phrase.*

Deictic elements (e.g. 'this', 'those') but also e.g. prepositional phrases ('on the hill', 'with the funny hat') are commonly used when the referent is available in the **visible** context:

(22)   *Could you give me **those** keys?*
(23)   *Look at the man **with the black coat**/**in the corner**/**in the car**/…*

Possessive phrases that refer to an IDENTIFIABLE ENTITY are typically used when the referent is made identifiable on the basis of **presupposition**.

(24)   ***My brother**'s car has just been stolen.*

The use of relative clauses is another formal strategy to make the referent of the matrix NP identifiable for the addressee. According to Lehmann (1984: 405) this is the typical function of relative clauses.[6]

(25)   *The police just arrested the man **who stole Bill's car**.*

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[5] Cf. Prince (1981: 236): "a discourse entity is Anchored if the NP representing it is LINKED, by means of another NP, or "Anchor", properly contained in it, to some other discourse entity."
[6] See also e.g. Foley (1986: 201): " … relative clauses provide crucial background information for the identification of the referents of the head nouns".

☞ **Localizing/Anchoring modifiers in the clause**

Localizing operator at the level of the clause: TENSE. The past tense of *buy* in (26) indicates that the event took place before the moment of speaking. TIME AND PLACE ADVERBIALS such as *in London* and *yesterday* are examples of localizing satellites, which provide more precise descriptions of the location of the buying event (in space and/or time).

(26)   *I BOUGHT$_{Past}$ this book IN LONDON$_{Place}$ YESTERDAY$_{Time}$*

2.5. Discourse-referential modifiers have the widest scope of the five modifiers categories and serve to specify the pragmatic status of the thing or event in conversational space, the world of discourse created by speaker and addressee. Discourse-referential modifiers specify, for example, whether or not the thing or event (already) has a location (is 'grounded') in the discourse world.

Noun Phrase (thing)	OCCURRENCE IN WORLD OF DISCOURSE	*Clause (event)*
Definite	THING OR EVENT (ALREADY) HAS A LOCATION IN THE DISCOURSE WORLD, I.E. THE ENTITY IS 'GROUNDED'	Realis
Nonspecific-Indefinite	THING OR EVENT DOES NOT HAVE A LOCATION IN THE DISCOURSE WORLD (YET), I.E. THE ENTITY IS NOT 'GROUNDED'	Irrealis

Figure 5. **Symmetry** between **Definite/Realis** and **Nonspecific-indefinite/Irrealis**
(Rijkhoff & Seibt 2005)

Definite & Realis marking in Fongbe (Lefebvre 1998: 94, 99 – glosses as in original; see also Lefebvre & Brousseau 2002)

(27)   *Ùn ɖù àsɔ́n ɔ́*
         I   eat   crab   **DET**
         'I ate the crab (in question/that we know of)'

(28)   *Jan wá ɔ̀*
         John arrive   **DET**
         'Actually, John arrived'

Non-specific-Indefinite & Irrealis marking in Jacaltec (Craig 1977: 93):

(29)   *Way-oj   ab   naj*
         sleep-**OJ**   EXH   CLF/he
         'Would that he slept!' [exhortative/irrealis mood]

(30)   *X–Ø-'oc   heb ix   say-a'   hun-uj   munlabel*
         ASP-ABS.3-start   PL   woman   look_for-FUT   a-**OJ**   pot
         'The women started looking for a pot.' [nonspecific reference]

(see also below on synchronic evidence for parallels between the layered structure of NPs and clauses)

Lexical examples of discourse-referential modifiers: 'same', 'other', 'actually', 'really'.

3. Synchronic and diachronic evidence for parallels between the layered structure of NPs and clauses (Rijkhoff 2008a)

3.1. Synchronic evidence for parallels between the layered structure of NPs and clauses

3.1.1. Morpho-syntactic parallels between NPs and clauses
Noun Phrase: Syntax (DEM NUM A N A NUM DEM; Rijkhoff 2004b: 175; 2008: 801).
(31) dem num A N   Alamblak, Dutch, Georgian, Hungarian, Kayardild, Ket, Nama Hottentot,
                                Imbabura Quechua, Pipil, Tamil, Turkish
          dem num N A   Burushaski, Guaraní (also e.g. French and other Romance languages)
          dem A N num   Zande
          dem N A num   Bambara
          num A N dem   Berbice Dutch Creole, Bislama, Sranan
          num N A dem   Basque, Hmong Njua
          A N num dem   Sango
          N A num dem   Oromo, Fa d'Ambu, Nubi

Other (non-iconic) patterns (apparent counterexamples):
- adjectives are actually verbs or nouns, i.e. adnominal relative clauses or NPs, turning the NP into a non-simplex construction; [7]
- numerals are expressed as phrasal modifiers, also turning the NP into a syntactically complex construction;
- modifiers are expressed as bound rather than free elements, which means their expression is a matter of morphology rather than syntax;
- modifiers are in apposition (rather than fully integrated constituents). For example, in the Australian language Kalkatungu "there are in fact no noun phrases, but [...] where an argument is represented by more than one word we have nominals in parallel or in apposition. [...] Each word is a constituent of the clause [...]" (Blake 1983: 145).
- modifiers are assigned a special pragmatic function like Focus, i.e. a marked pattern (Rijkhoff 2004a: 272–273).

Clause (syntax): V – QUALITY – QUANTITY – LOCATION (Quirk et al. 1985: 551)
In English different kinds of temporal satellites tend to occur in the order time duration ('for a short while' = *qualifying satellite*), time frequency ('every day or so' = *quantifying satellite*) and time position ('in January' = *localizing satellite*), as in:

(32) *I was there*   *for a short while every day or so   in January* (Quirk et al. 1985: 551)
                              QUALITY   QUANTITY   LOCATION

Clause (verbal morphology): Mood-Tense-Aspect V-Aspect -Tense-Mood (Bybee 1985: 196).
And in her study on morphology, Bybee (1985: 196) investigated the ordering of inflectional morphemes relative to the verb in a sample of fifty languages. She found that ASPECT occurs closest to the stem, followed by TENSE, and then by MOOD.[8]

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[7] Apart from languages without modifying adjectives, there are also languages without adnominal demonstratives or numerals as well as languages in which a certain adnominal modifiers never seem to co-occur in the same NP (Rijkhoff 2002: 329f.; Derbyshire 1979: 132; Everett 2005).
[8] The only exception to this ordering she found in her 50-language sample seems to be Ojibwa, where the 'Dubitative suffix' precedes the 'Preterite suffix'.

FLEXIBLE	Type 1	contentive			
PARTS-OF-SPEECH SYSTEMS	Type 2	verb		non-verb	
	Type 3	verb	noun	**modifier**	
RIGID PARTS-OF-SPEECH SYSTEMS	Type 4	verb	noun	adjective	adverb
	Type 5	verb	noun	adjective	
	Type 6	verb	noun		
	Type 7	verb			

Figure 7. Part–of–speech system (based on Hengeveld 1992; adverb = manner adverb).

In Ngiti (Nilo-Saharan) and other languages of Type 3 we find that the same form is used as a *quality satellite* in the NP and in the clause (Kutsch Lojenga 1994: 336):

> [In Ngiti] *there is no morphological nor a clear syntactic distinction between a class of adjectives and a class of adverbs in Ngiti. The functional term* MODIFIERS *is therefore used [...] to cover a fairly large grammatical class of words, containing about 150 items, which are neither nouns nor verbs and which all have a modifying function in relation to different constituents.*

The same true is for e.g. Dutch:

(33) *Ze   zong   een mooi   lied*
     she   sang   a   beautiful song
     'She sang a beautiful song'

(34) *Ze   zong   mooi*
     she   sang   beautiful(ly)
     'She sang beautifully.'

3.1.3. Isomorphism II: NPs and clauses sharing the same grammatical modifier (with the same modifiers function; see also 27-30 above)

Fongbe

(35)a. *Ùn   ɖù   àsɔ́n   ɔ́*   b. *Jan   wá   ɔ̀*
       I   eat   crab   **DET**   John arrive **DET**
       'I ate the crab (in question/that we know of)'   'Actually, John arrived'

Jacaltec (Craig 1977: 93):

(36) *Way-oj   ab   naj*
     sleep-**OJ**   EXH CLF/he
     'Would that he slept!' [exhortative/irrealis mood]

(37) *X–Ø-'oc   heb ix   say-a'   hun-uj munlabel*
     ASP-ABS.3-start PL   woman look_for-FUT a-**OJ**   pot
     'The women started looking for a pot.' [nonspecific reference]

3.2. Diachronic evidence for parallels between the layered structure of NPs and clauses
Grammaticalization: Reanalysis & analogy.
Reanalysis and analogy are closely associated with two cognitive strategies: METONYMY (reanalysis based on associative relations) and METAPHOR (analogy by transfer of features) respectively (Hopper & Traugott 2003: 84-93; Heine et al. 1991).
☞ Historical connections between linguistic material across the space-time boundary ('from space to time') are largely due to METAPHORICAL PROCESSES.

☞ Historical relations between grammatical modifiers inside the NP or clause ('from inner to outer layer') are METONYMIC IN NATURE.

The layered model seems to be supported by two kinds of historical developments. The historical relationships across the space-time boundary (section 3.2.2) are mainly METAPHORICAL in nature, in that elements to talk about entities that belong to one dimension (space) end up being used to also talk about entities of another dimension (time). The METONYMIC dimension of grammaticalization is best exemplified by the more or less continuous change 'from center to periphery' in the layered representation of linguistic structures (section 3.2.3). **Changes along the two dimensions seem to be largely unidirectional (from space to time, from inner to outer layer).**

3.2.2. Historic relations between modifiers across linguistic constructions (**metaphorical**)

Metaphorical change: hierarchy of conceptual domains (Heine et al. 1991: 48)
(38) PERSON > OBJECT > ACTIVITY > **SPACE > TIME** > QUALITY

Ewe (Heine et al. 1991: 66)
(39) *megbé   keke-áḑé   le   é-sí*
      back   broad-INDEF   be   3SG.POSS-hand
      (a) 'He has a broad back'
      (b) 'Its back is broad'

(40) *dzra   xɔ-á   pé   megbé   ḑó*
      prepare house-DEF   of   back   ready
      (a) 'Prepare the back wall of the house!'
      (b) 'Prepare the place behind the house!'

(41) *é-le   megbé   ná-m*
      3SG-be   behind   to-1SG
      (a) 'He is behind me (spatially)'
      (b) 'He is late (= he could not keep pace with me)'

(42) *é-tsí   megbé*
      3SG-stay   behind
      (a) 'He remained behind/is late'
      (b) 'He is backward/dull'

- **Classifying modifiers**: markers of COLLECTIVITY in space in older IE languages (Greek, Latin, Sanskrit) developed into markers of PERFECTIVITY (Von Garnier 1909; Kulikov 1998)[9].
      Traces of this development in the modern Germanic languages: the Germanic prefix *ge–* still has a collectivizing meaning in modern Dutch nouns like *gebroeders* '(collection of) brothers' and *gebergte* '(collection of) mountains'. At some point in the history of Germanic this prefix came to be used with certain imperfective verbs to express the notion of completeness (i.e. perfectivity) and ultimately it became associated with the past participle form of the verb (Kirk 1923: 65):

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[9] See Kulikov's message to the *Discussion List for The Association for Linguistic Typology*, 31 March 1998 (Subject: collective/perfective). The message can be found at:
http://listserv.linguistlist.org/cgi-bin/wa?A2=ind9803e&L=lingtyp&D=1&F=&S=&P=606

Dutch
(43) *Hij   heeft   net   een   lied   voor   ons   **ge**-zongen*
       he   has   just a   song   for   us   sung (past participle of 'sing')
       'He just sang a song for us'

- Quantifying modifiers: in many languages there is a strong resemblance between markers of plurality in the NP and in the clause (Mithun 1988; Newman 1990: 118; Frajzyngier 1997).

- Localizing modifiers: Anderson and Keenan (1985: 297) noted that in most languages "the spatial expressions are imported directly into the temporal domain by means of metaphorical representation of time as a spatial dimension [...]" as in 'this week' or 'that evening'. Some languages have gone further in that erstwhile demonstratives ultimately developed into tense markers. For example, in Panare (a Cariban language), two tense-marking auxiliaries are derived etymologically from demonstrative pronouns (Gildea 1993: 53).

<u>3.2.3. Diachronic relations between modifiers in the NP and in the clause (**metonymy**).</u>

☞ **Both in NP and clause: from inner to outer layer (scope increase)**

3.2.3.1 Grammaticalization of operators in the clause

- from aspect to tense
According to the *World Lexicon of Grammaticalization* (Heine & Kuteva 2002: 231) there is a "general process whereby verbal aspect markers may be further grammaticalized to tense markers (see Comrie 1976: 99–101; Bybee 1985: 196; Bybee & Dahl 1989: 56–57) …".
☞ **from classifying operator to localizing operator**

- from tense to mood
The change from tense to mood markers is exemplified by future tense markers (Bybee et al. 1994: 205ff., 347–8), which can develop into markers of epistemic modality (possibility, probability).
☞ **from localizing operator to propositional operator.**

3.2.3.2 Grammaticalization of operators in the NP: **from inner to outer layer (scope increase)**

- from collective to plural
Collective markers (together with person plural pronouns) are the most popular sources of the plural marker (Frajzyngier 1997: 237), i.e. a classifying operator often turns into a quantifying operator. The diachronic relation between collective and plural has been observed in many languages and language families across the globe, such as Ket (a language isolate), the Kartvelian languages, the Mesoamerican languages, and the Semitic languages (Rijkhoff 2004a: 117). The grammaticalization process is currently observed in e.g. Mandarin Chinese and Hmong.
☞ **from classifying operator to quantifying operator**

- from demonstrative to definite article
The development from adnominal demonstrative to definite article (and beyond) is also well documented is many languages. The most elaborate study on this subject is probably still Greenberg 1978a (but see also Diessel 1999 and references therein on the grammaticalization of demonstratives in general). According to Greenberg's theory, four stages can be recognized in the process.
☞ **from localizing operator to discourse-referential operator**

3. Why (semantic, morphosyntactic) parallels between NPs and clauses?
(Rijkhoff 2008a; 2008c: 813-814)?

Apart from the least interesting zero hypothesis (similarities due to chance), there are basically three possible ways to account for parallels between NPs and clauses:

a. clause structure is derived from NP structure;
b. NP structure is derived from clause structure;
c. NP structure and clause structure are due to a single cognitive procedure that deals with spatio - temporal entities.

Currently the first possibility has the best empirical foundation. Although relatively little is still known about the way the human cognitive system deals with spatial and temporal entities, linguistic evidence indicates that our conceptual system is largely metaphorical in nature (Lakoff 1987). Since there are many examples, which show that spatial metaphors are used to express temporal and other non-spatial notions, it is assumed that spatial conception plays a fundamental role in human cognition (Lyons 1977: 718; Levinson 1992). So perhaps it is because temporal entities are understood in terms of (cognitively less complex) spatial entities that (to some extent) NPs and clauses can be analyzed in a similar fashion.

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Appendix 1. More on layering and formal representation

INTERPERSONAL LEVEL ('LANGUAGE AS EXCHANGE')
At this level, operators (ω, π) and satellites (τ, σ) are concerned with the interpersonal status of four kinds of entities in the *World of Discourse*: [a] clauses (or rather the messages contained in the clauses), [b] propositions, [c] events and [d] things.

CLAUSE

	Operator	Satellite
4th order entity: Message (E)		
ILLOCUTION LAYER	π_7	σ_7

Illocutionary modifiers: S informs A about the illocutionary status of message E_i

	Operator	Satellite
3rd order entity: Proposition (X)		
PROPOSITION LAYER	π_6	σ_6

Proposition modifiers: A is informed about S's personal assessment of / attitude towards proposition X_i as regards the probability, possibility or desirability of the actual occurrence of event e_i.

NOUN PHRASE

	Operator	Satellite		Operator	Satellite
ENTITY	1rst order: Thing (x)			2nd order: Event (e)	
LAYER	ω_5	τ_5		π_5	σ_5

Discourse modifiers: S informs A about the existential status of thing x_i or event e_i in the *World of Discourse*.

- -

REPRESENTATIONAL LEVEL ('LANGUAGE AS CARRIER OF CONTENT')
Descriptive modifiers specify properties of an entity in the *World of Discourse* in terms of Kind, Quality, Quantity, and Location.

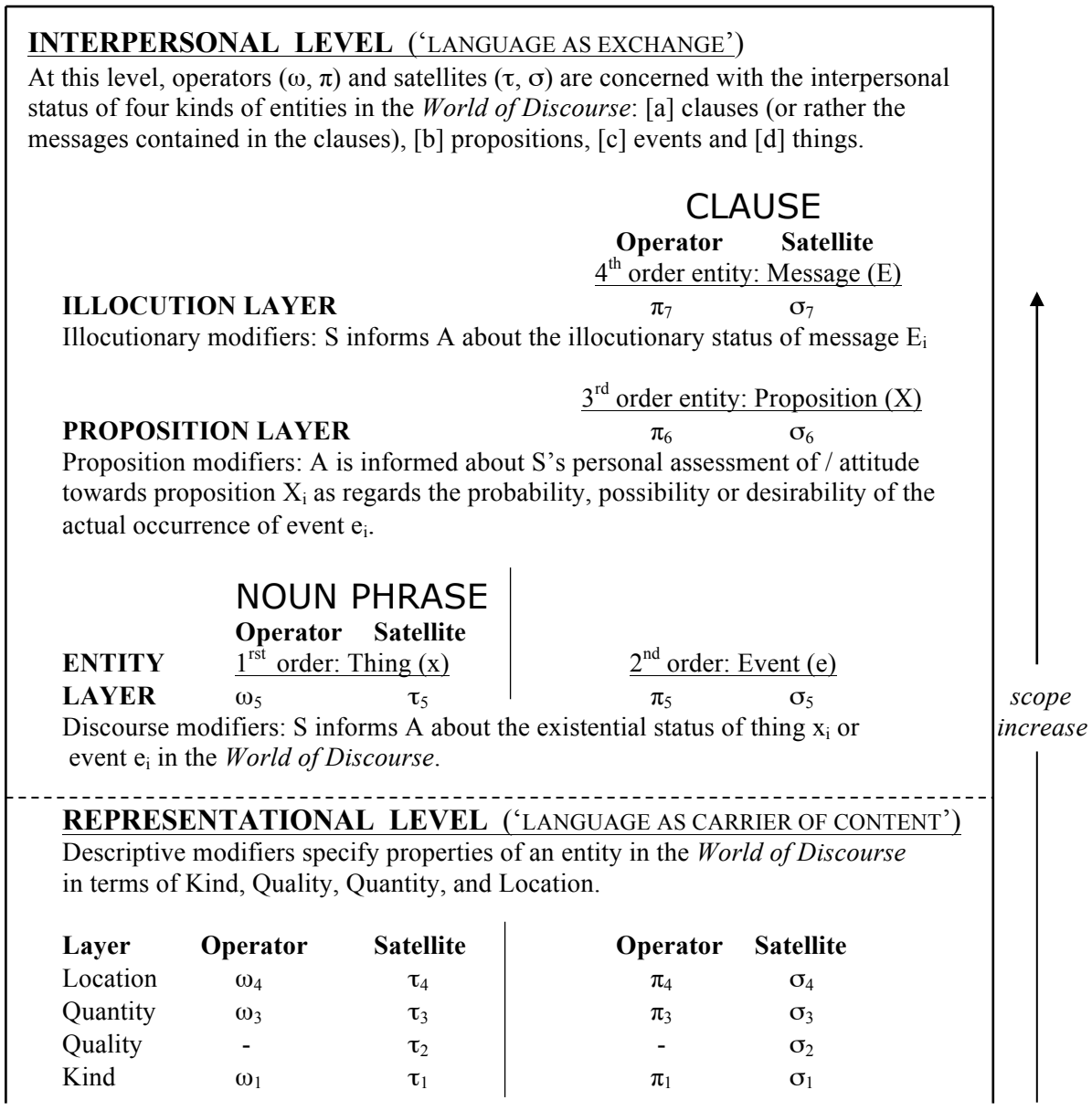| Layer	Operator	Satellite	Operator	Satellite
Location	ω_4	τ_4	π_4	σ_4
Quantity	ω_3	τ_3	π_3	σ_3
Quality	-	τ_2	-	σ_2
Kind	ω_1	τ_1	π_1	σ_1

scope increase

Figure XX. Layers of modification in noun phrase (5) and clause (7)

Hierarchical organization: modifiers of the highest layer of the clause (illocutionary modifiers π_6, σ_6) have the widest scope (the whole message), whereas the scope of clausal modifiers represented at the lowest layer (classifying modifiers π_0, σ_0), which only further specify the *kind* of event, is restricted to the main predicate (typically the verb).

> *There are no grammatical modifiers or 'operators' in the quality layer ('qualifying operators'), the reason being that QUALIFYING MODIFIERS typically express gradable notions (e.g. 'rather funny', 'extremely boring'). Operators (function words, particles, affixes etc. used to express grammatical categories like Definiteness or Tense) are, by their nature, non-gradable (Rijkhoff 2008a: 85-86).*

Formal representation (here: Noun Phrase structure)
The 5-layered NP model can be formally represented as in (44) below, where each grammatical modifier ('operator' ω) or lexical modifier ('satellite' τ) takes a certain layer (L) as its argument. In this slightly simplified representation the Interpersonal and the Representational levels do not clearly co-exist as separate entities (as in current FDG) and the f-variable has been omitted (García Velasco and Rijkhoff 2008: 26):

Simplified representation of NP structure (reflecting scope relations among modifier categories)
(44) NP_i: $[\omega_5 [\omega_4 [\omega_3 [- [\omega_1 Noun(x_i) \tau_1] \tau_2] \tau_3] \tau_4] \tau_5]$ *(simplified version)*

x = referent variable (symbolizes the referent of the NP);
ω = NP operator: classifying operator ω_1 only has the nominal predicate in its scope, whereas discourse-referential operator ω_5 has the widest scope and is concerned with interpersonal/pragmatic properties of the referent;
τ = NP or term satellite (τ_1 = classifying satellite, τ_2 = qualifying satellite, τ_3 = quantifying satellite, τ_4 = localizing satellite, τ_5 = discourse-referential satellite).

Formally speaking, operator ω and satellite τ of Layer$_N$ are predicates take the same argument, i.e. information specified in layer L_{N-1} (e.g. the argument of operator ω_5 and satellite τ_5 is everything contained in layer L_4). The indexed variable 'NP_i' allows for reference to the noun phrase (García and Rijkhoff 2008: 20). The layered NP-clause model can also account for languages with 'nominal tense' (Nordlinger and Sadler 2004), because the functional modifier categories are characterized in general, NP/clause neutral terms. For example, the layered NP/clause model does not specify whether localizing modifiers in the NP concerns 'location' in the spatial dimension (e.g. attributive demonstratives) or in the temporal dimension (tense markers, time adverbs/adverbials). The same holds for localizing modifiers at the level of the clause, which can specify the temporal or spatial location of an event (see e.g. the verbal category 'absentive', which is basically a spatial deictic construction; cf. de Groot 2000).

(45)   The underlying structure of the noun phrase (Rijkhoff 2008a-b-c):
   NP_i: $[\omega_5 {}_{L4}[\omega_4 {}_{L3}[\omega_3 {}_{L2}[- {}_{L1}[\omega_1 {}_{L0}[(noun(f_i))(x_i)]_{L0} \tau_1(L_0)]_{L1} \tau_2(L_1)]_{L2} \tau_3(L_2)]_{L3} \tau_4(L_3)]_{L4} \tau_5(L_4)]$

   For example (slightly simplified): 'those two famous nuclear physicists across the table'
   NP_i: $[Def {}_{L4}[Dem_{Rem\ L3}[3 {}_{L2}[- {}_{L1}[\omega_1 {}_{L0}[(physicist_N(f_i))(x_i)]_{L0} nuclear_A(L_0)]_{L1} famous_A(L_1)]_{L2}$
   $\tau_3(L_2)]_{L3} across\ the\ table(L_3)]_{L4} \tau_5(L_4)]$

NP operators   *NP satellites*
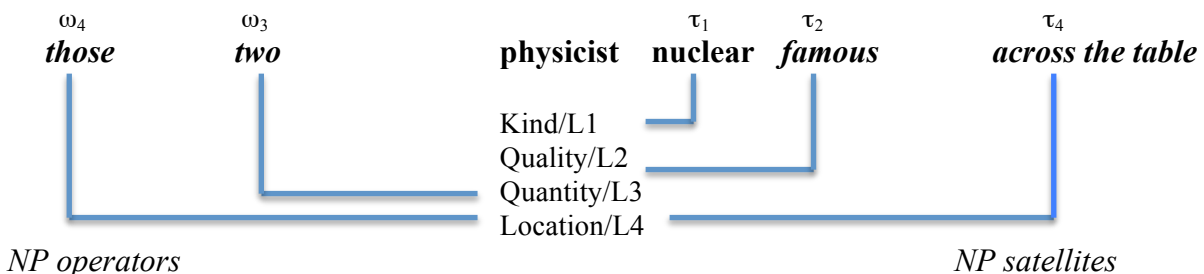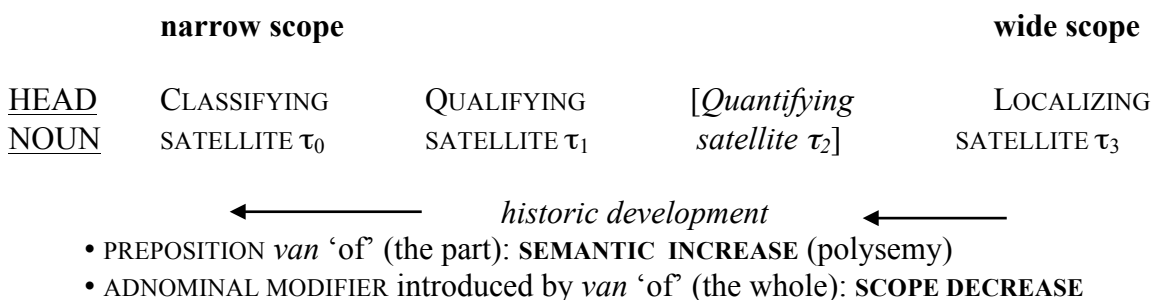
Figure 5. An even more simplified representation of
'*those two famous nuclear physicists across the table*'

Appendix 2. Adnominal possessives with 'van': scope increase and scope decrease
(from Rijkhoff 2009: 61-62)

According to the LOCALIST HYPOTHESIS, language is built on a spatial metaphor in that spatial expressions are thought to be more basic than various kinds of non-spatial expressions (Lyons 1977: 718; Lakoff and Johnson 1980: 14f., 56f.; but cf. Heine et al. 1991: 114-118). On the assumption that the locative/possessive meaning precedes all other (non-spatial) meanings in the diachronic development of a polysemous item like *van* 'of', one could hypothesize the following scenario (Heine and Kuteva 2007: 280-283). When the Dutch preposition *van* 'of' became more and more polysemous, acquiring new non-spatial meanings along the way, it also appeared in qualifying and classifying adnominal modifiers. The scope of qualifying and classifying satellites is, however, more restricted than the scope of localizing satellites (*Figure* 1 and 2).

(45) SEMANTIC INCREASE AND SCOPE DECREASE: THE DIACHRONIC DEVELOPMENT OF NON-SPATIAL MEANINGS OF DUTCH *VAN* 'OF' AND THE SCOPE OF LEXICAL ADNOMINAL POSSESSIVES IN DUTCH (cf. *Figure* 1 and 2):

	narrow scope			**wide scope**
<u>HEAD</u> <u>NOUN</u>	CLASSIFYING SATELLITE τ_0	QUALIFYING SATELLITE τ_1	[*Quantifying satellite* τ_2]	LOCALIZING SATELLITE τ_3

⟵   *historic development*   ⟵

- PREPOSITION *van* 'of' (the part): **SEMANTIC INCREASE** (polysemy)
- ADNOMINAL MODIFIER introduced by *van* 'of' (the whole): **SCOPE DECREASE**

Thus, paradoxically, according to this scenario INCREASE in meaning of the preposition *van* 'of' must have gone hand in hand with DECREASE in semantic scope of the new modifier category it could occur in (*from outer to inner layer* or *from periphery to center*).