

## IV. Quantification

Ronald W. Langacker  
University of California, San Diego

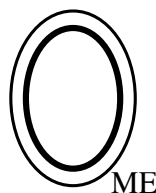
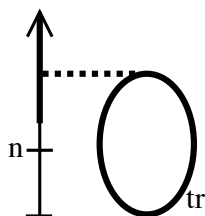
### A. Relative Quantifiers

- (1)(a) **Absolute quantifiers:** *many, much, (a) few, (a) little, three, several*  
 (b) Occurrence as clausal predicates: *Our problems are {many / few / three / ?several}.*  
 (c) Co-occurrence with definite grounding: *those three cats; our many problems; the few houses left standing; the little wine we drank.*  
 (d) The nominal referent may be actual: *In the room were many cats.*  
 (e) They are characterized with respect to a *scale of measurement*.
- (2)(a) **Relative quantifiers:** *all, most, some, no, every, each, any*  
 (b) Non-occurrence as clausal predicates: *\*Our problems are {all / most / no / every / each}.*  
 (c) Mutually exclusive with definite grounding: *\*those all cats; \*our some problems; \*the no houses left standing; \*the any wine we drank; \*this every woman.*  
 (d) The nominal referent is always virtual: *\*In the room were most cats.*  
 (e) They are characterized with respect to the *maximal extension* (ME) of a type.

(3)

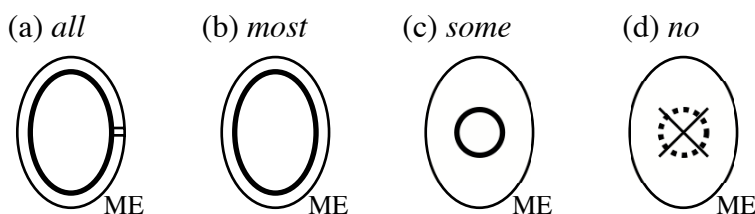
(a) *many* (ABS/ADJ)

(b) *most* (REL/GR)



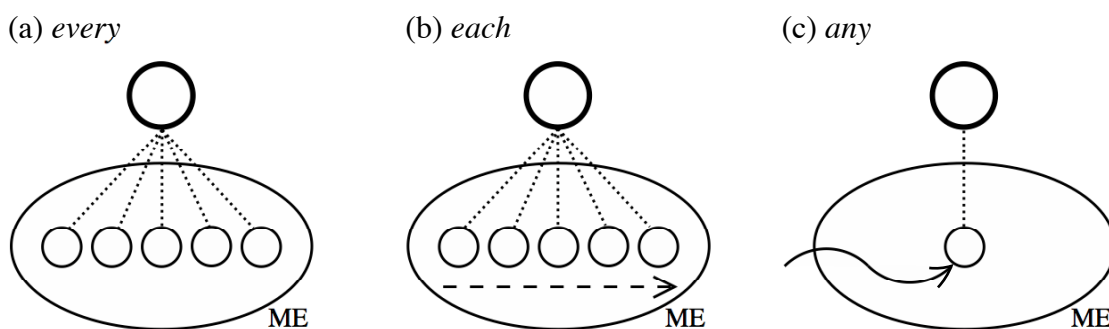
- (4)(a) *Relative quantifiers* are so called because they specify a quantity *in relation to* ME.  
 (i) *Most cats are lazy* indicates that a **large proportion** of them are.  
 (ii) *Many cats are lazy* indicates that a **substantial number** of them are.  
 (b) When truly maximal and unrestricted (the default), ME is a virtual entity (like *infinity*). It is not limited to any particular time or place, nor to instances that have actually existed.  
 (c) ME is sometimes interpreted within a limited *scope of conception*, in which case it might be called the **contextually relevant extension** (RE). This can be actual instead of virtual.  
 (d) *The cruise ship sank quickly, but {all / most / some} passengers were rescued.*
- (5) The system of relative quantifiers divides into two basic subsystems.  
 (a) **Proportional** quantifiers occur with mass nouns, including plurals: *all {milk / cats}, most {milk / cats}, some {milk / cats}, no {milk / cats}*, but *\*all cat, \*most cat*.  
 (b) **Representative instance** quantifiers occur with singular count nouns: *every cat, each cat, any cat*, but *\*every {milk / cats}, \*each {milk / cats}*.

## (6) Proportional quantifiers



- (7)(a) For *all*, '=' indicates that the profiled mass is equal to ME. They coincide but are *functionally distinct*: the nominal referent and the basis for its quantification.
- (b) Like negation in general, *no* invokes a virtual entity but specifies that it is actually excluded from reality—a kind of *mental cancellation* (X). *We found no {milk / cats} in the kitchen* cancels the conceived event by specifying that the quantity involved is zero.
- (c) *All* and *most* are most clearly proportional—like *filling a container* or *almost filling* it. *Some* and *no* are proportional in a more abstract sense: *no particular* proportion or *zero* proportion. The container is either empty or has something in it.
- (d) The empty/non-empty distinction holds for single objects as well as masses. *Some* and *no* can thus occur with singular count nouns: *Some stranger fixed our car*; *No cat can eat that much tuna*. Quantity is not an issue with such nouns—the number is always 'one'.
- (i) *Some* emphasizes indefiniteness (like an emphatic version of *a*).
- (ii) *No* evokes a single instance but cancels it, so the actual quantity is zero.
- (8)(a) Representative instance quantifiers occur with *singular count nouns* even though the property described in the clause applies to all instances of the type. The profiled instance is a *virtual* one construed as being *representative*.
- (b) These quantifiers incorporate **imagined scenarios** representing basic ways of accessing a collection of objects so that all of them can be "reached". These objects are all conceived as corresponding to the profiled instance and are therefore covered by the generalization.
- (c) We can access a set of objects by viewing them **simultaneously** (*every*), by examining them **sequentially** (*each*), or by making a **random choice** (*any*).
- (d) These are only virtual activities, invoked for apprehending the connection between the profiled instance and those covered by the generalization. Still, they result in subtly different meanings that help explain the uses of the quantifiers.

## (9) Representative instance quantifiers

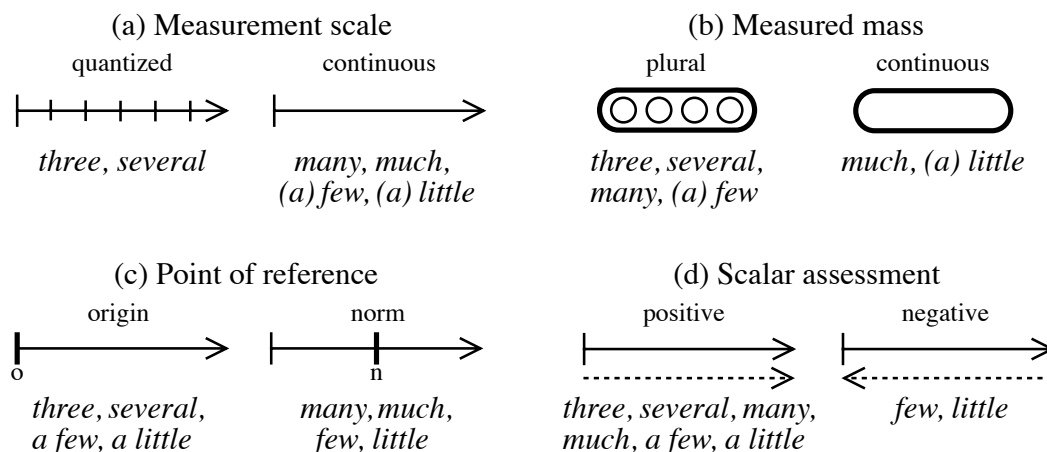


- (10)(a) *The air is so clear that you can see {every / each / any} peak in that mountain range.*  
 (b)(i) *{Every / Each / Any} cat likes tuna.* (ii) *{\*Every / \*Each / Any} milk will spoil if not kept cool.* (iii) *{\*Every / \*Each / Any} cats will fight with one another.*  
 (c) *Take a card—{any / \*every / \*each} card.* [magician performing a card trick]  
 (d) Degrees of individuation: *all < every < each < any.*  
 (i) *All cats are similar > {?Every > ?\*Each > \*Any} cat is similar.*  
 (ii) *She questioned {?all the boys / ?every boy / each boy / \*any boy} in turn.*  
 (iii) *{Every one / Each (one)} said that he didn't break the window.*
- (11)(a) Relative “quantifiers” do not really specify *quantity*, but **degree of universality** in ME.  
 (b) *All, every, each, and any* are **universal**. *No* specifies **universal exclusion**. *Most* **approximates** universality. *Some* is quite **vague** about quantity (excluding only zero).  
 (c) They provide an alternate form of **epistemic control**: generalizations pertaining to an open-ended set of entities (as opposed to specific knowledge about identified referents).  
 (d) *My cat is lazy* is definite and quite specific, but applies to only one creature. *Most cats are lazy* is very widely applicable, even if it leaves some uncertainty in any particular case.

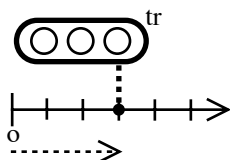
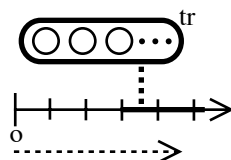
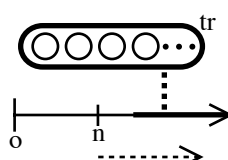
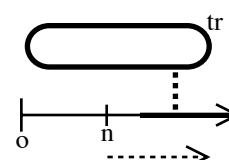
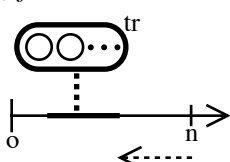
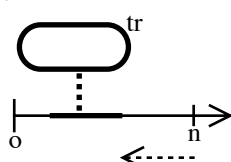
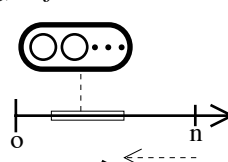
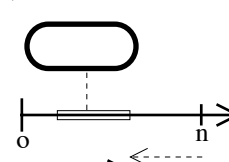
## B. Absolute Quantifiers

- (12)(a) **Absolute quantifiers:** *many, much, (a) few, (a) little, three, several*  
 (b) These core quantifiers are part of a massive system whose members differ in degree of entrenchment and grammaticization. There are productive patterns for forming new ones.  
 (c) *three > twenty-five > two hundred > four hundred seventy-nine*  
 (d) *a lot of X > a gallon of X > several tons of X > four hundred seventy-nine bags of X*  
 (e) *A lot of* (compressed to *alotta*) is taking over from *much* and *many* as a core element.  
*We drank {a lot of / ??much} wine.* *He can eat {a lot of / ?many} bananas.*
- (13) Core elements differ in regard to a number of parameters:  
 (a) The **measurement scale** can either be *quantized*, with discrete values, or *continuous*.  
 (b) The **measured mass** can either be *plural* or *continuous*.  
 (c) The **point of reference** can be the scale's *origin* (o) or a *norm* (n).  
 (d) The **scalar assessment** (direction of mental scanning) can be *positive* or *negative*.

(14)



(15)

(a) *three*(b) *several*(c) *many*(d) *much*(e) *few*(f) *little*(g) *a few*(h) *a little*

(16) *Few* and *little* are generally considered negative because they occur with **negative polarity items**, like unstressed *any* and *give a damn*.

(a) *He really does **not** have **any** friends.* [*\*He really has **any** friends.*]

(b) *I **don't** really **give a damn** about politics.* [*\*I really **give a damn** about politics.*]

(c) ***Few** students {have **any** interest in / **give a damn** about} politics.*

(d) ***Little** interest in the topic was shown by **any** students.*

(17) Other absolute quantifiers, including *a few* and *a little*, are evidently positive in nature:

(a) ***Few** guests consumed **any** wine.*

(b) ***Little** wine was consumed by **any** guests.*

(c) *\***A few** guests consumed **any** wine.*

(d) *\***A little** wine was consumed by **any** guests.*

(e) *{**Many** / **A lot of**} guests drank (\***any**) wine.*

(f) *{**Much** / **A lot of**} wine was consumed by {the / \***any**} guests.*

(18)(a) Any conception of **ordering** or **directionality** consists in *sequenced processing activity* at some level of organization (perhaps on a very small time scale).

(b) A measurement scale arises through the *summation* of a *series of comparisons*, each registering a value larger than the preceding one. Though below the level of conscious awareness, this *scanning* from value to value gives the scale an **inherent directionality**.

(c) The directionality inherent in the *scale itself* has to be distinguished from the directionality of the **scalar assessment**—how we *access* the scale to specify a quantity.

(d) Usually this assessment consists in scanning that **conforms** to the scale's inherent directionality. *Few* and *little* are negative in the sense that the assessment **reverses** it.

(19)

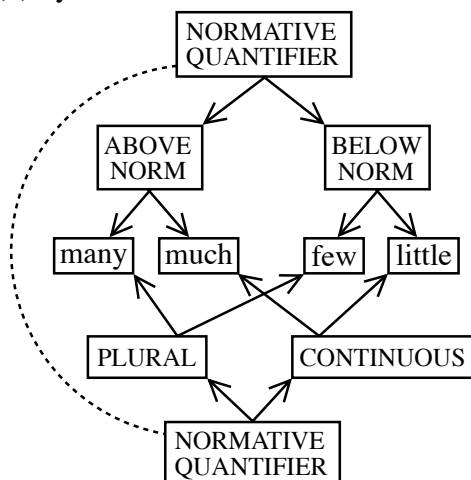
(a) Paradigmatic view

NORM QNT	PL	CONT
ABOVE NORM	many	much
BELOW NORM	few	little

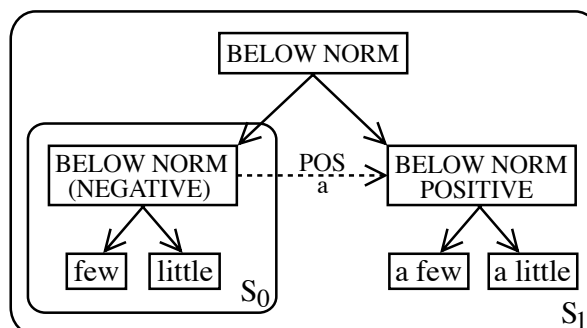
(c) Paradigmatic view

BELOW NORM	PL	CONT
NEG	few	little
POS	a few	a little

(b) Systemic view



(d) Systemic view

(20)(a) *Our problems are {many / few / three}.*(b) *those three cats; our many problems; the few houses left standing; the little wine we drank*(c) *?Our problems are several. \*Our money is {much / little}.*(d) *?the few houses; ??the little wine; \*the much wine; \*our little gasoline*(21)(a) **A:** *How many apples did he eat?* **B:** *He ate {three / \*the green ones}.*(b) **A:** *Which apples did he eat?* **B:** *He ate {\*three / the green ones}.*(c) *those **two** women standing at the bar those **three** women sitting at the table*(d) **A:** *See those women?* **B:** *Which ones?*(i) **A:** *the ones {standing at the bar / sitting at the table}*(ii) **A:** *??the {**two** / **three**}*

(22)(a) Alternatives: (i) analyze absolute quantifiers as grounding elements when they are initial;

(ii) posit a  $\emptyset$  grounding element in such expressions (an indefinite article, like *sm*).(b) *{those /  $\emptyset$ } three cats; {the /  $\emptyset$ } many problems; {his /  $\emptyset$ } few children*

(c) Arguments against positing a zero grounding element:

(i) Zero elements are theoretically suspect and ought to be avoided.

(ii) Unlike the putative  $\emptyset$  article, *sm* does not occur with absolute quantifiers: *\*sm three cats; \*sm many problems; \*sm few children.*(iii) The fact that *sm* is mutually exclusive with absolute quantifiers suggests that they, like *sm*, should be considered grounding elements.

- (23)(a) Relative and absolute quantifiers share the following properties: (i) quantifying masses; (ii) usually being initial in a nominal; (iii) being able to stand alone as full nominals; and (iv) appearing in the construction indicating a contextually relevant extension (RE).

(b) *most cats, no elephant, every woman, seven potatoes, many nations, little trouble*

(c) *Some were broken. Each is worth seeing. I bought five. Many complained.*

(d) *{all / most / none / each / any / two / several / many / few} of those teachers*

- (24) Especially with RE, the two kinds of quantifiers are often quite comparable in their import:

(a) *It was a fairly easy exam. {Most / Many} students passed.*

(b) *It was an easy exam, but {some / several} students failed.*

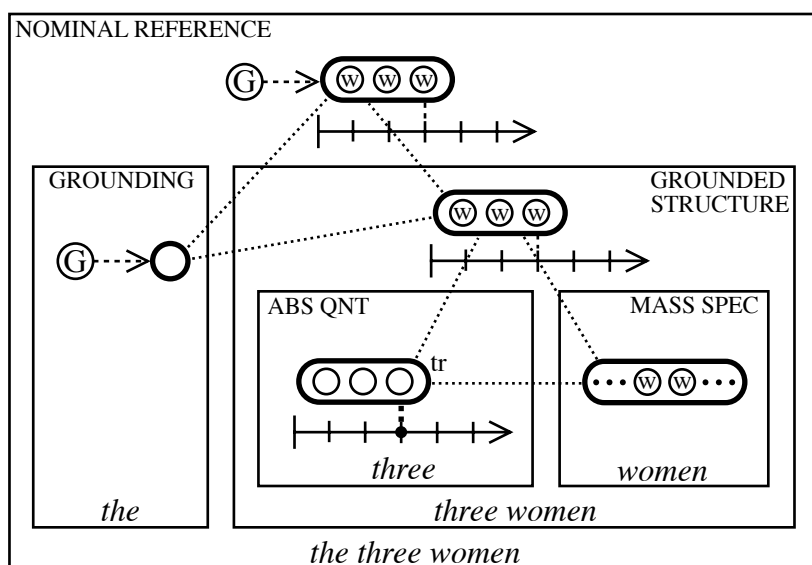
(c) *It was a very hard exam. {Hardly any / Few} students passed. Almost none.*

- (25) Like demonstratives and possessives, which are clearly grounding elements, numbers occur with classifiers in languages which have them. E.g. in Mandarin:

*zhèi-tiáo shéngzi* 'this rope'      *liǎng-tiáo shéngzi* 'two ropes'  
 this-CLSF rope                      two-CLSF rope

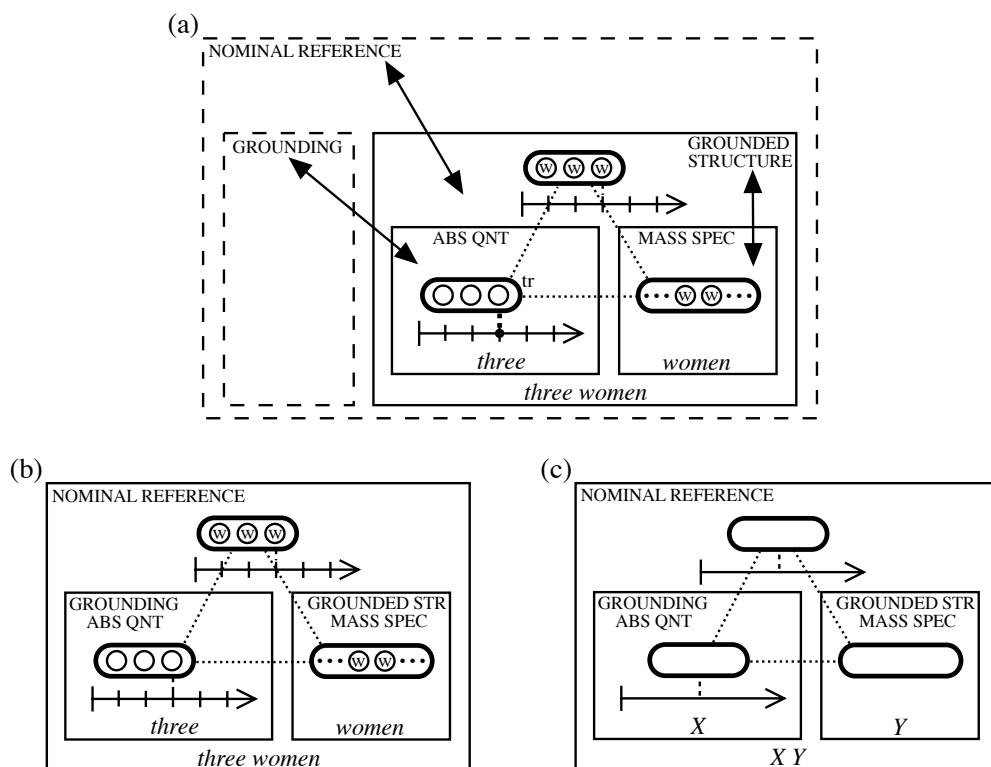
- (26)(a) Relative and absolute quantifiers represent alternate quantifying **strategies**.  
 (b) Relative quantifiers are grounding elements: **universality** in ME represents a kind of *epistemic status* and a means of *epistemic control*.  
 (c) Like other adjectives, absolute quantifiers specify a **scalar property**, but are atypical because the property is quite extrinsic and not very useful for identification.  
 (d) Like relative quantifiers, they afford epistemic control in the form of generalizations, but since they do not specify universality the generalizations are weaker.  
 (e) Thus absolute quantifiers function as either grounding elements or adjectival noun modifiers. They are non-typical in either capacity.

- (27)



- (28)(a) Not every construction consists in a compositional hierarchy of overt elements. It need only be an assembly: a configuration of structures (including semantic functions).
- (b) Examples of non-compositional constructions are **discourse constructions** (e.g. for implicit nominal grounding) and the **functional recategorization** of overt elements (e.g. the reinterpretation of *the moon* as a kind of proper noun).
- (c) When it stands alone as a nominal, an expression like *three women* undergoes a functional reorganization such that the basic functions of a nominal—GROUNDING, GROUNDED STRUCTURE, and NOMINAL REFERENCE—are assigned to the overt structures it comprises.
- (d) The expression is thus assimilated to the pattern of nominals like *most women*, where the initial quantifier is an indefinite grounding element (which profiles a schematic thing).

(29)

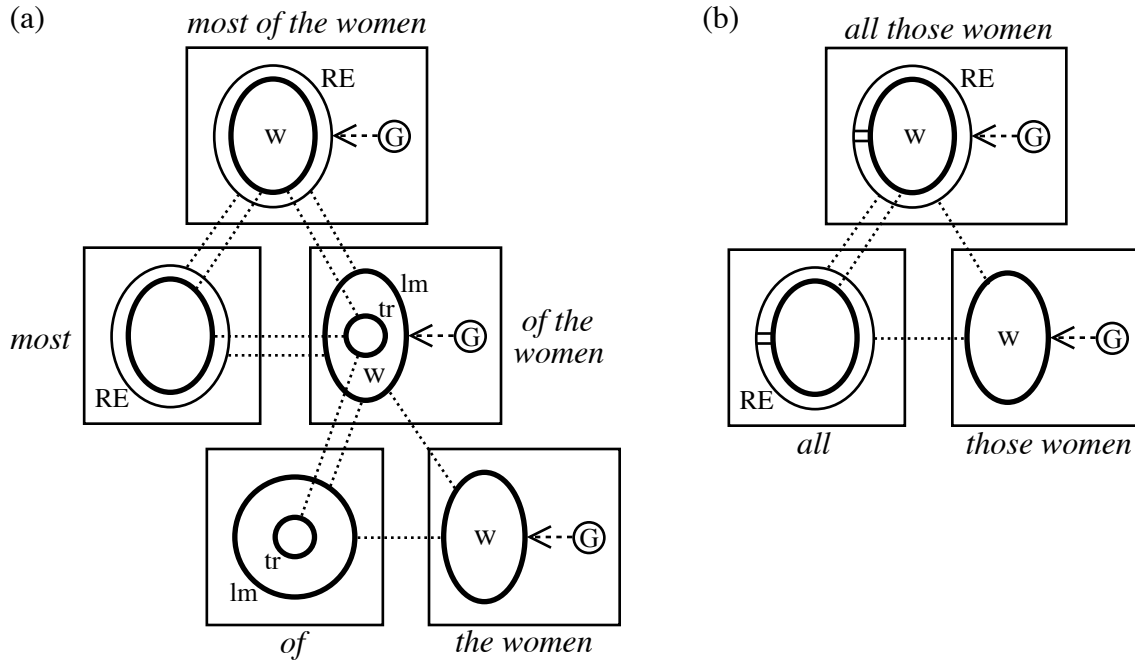


## C. Quantifier Constructions

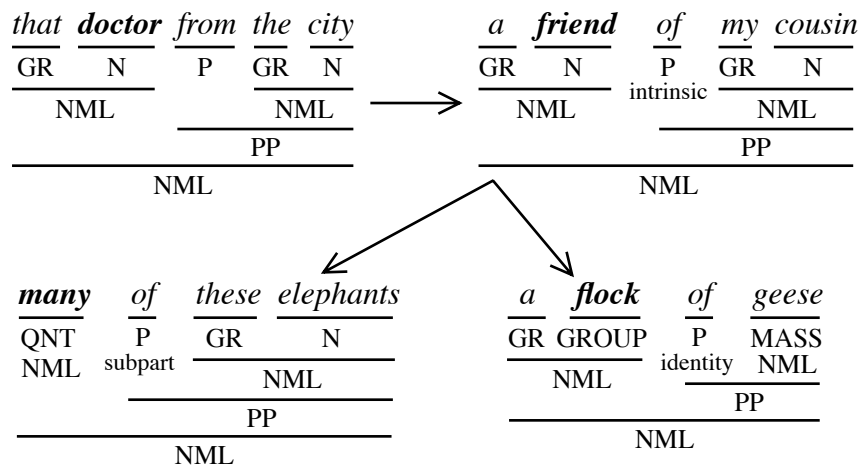
- (30)(a) The generalizations achieved with relative quantifiers often pertain to a **contextually relevant extension** (RE), rather than the maximal extension (ME).
- (b) The limited scope of interpretation may be evident just from the discourse context:
- It was really a hard exam. {All / Most / Some} students failed.*
  - When they extinguished the library fire, {no / every} book suffered water damage.*
- (c) A limiting construction: [QUANTIFIER (*one*)]<sub>NOMINAL</sub> + *of* + DEFINITE NOMINAL
- (d) *all of the books, most of her children, some of them, none of those dogs, every one of the candidates, each (one) of us, any (one) of those elephants*
- (e) NOMINAL: *all, most, some, none (no+one), \*no, every one, \*every, each (one), any (one)*
- (f) *many of the students, little of her wealth, (a) few of my friends, two of the benches*

- (31)(a) *Of* profiles a relationship that is intrinsic or natural (as opposed to extrinsic or accidental).  
 (b) *the students {of / with} that teacher the color of her hair vs. the gray in her hair*  
 (c) Part-whole: *the tip of my finger; the seat of this chair; the center of Lublin*  
 (d) Identity: *the state of California; the month of April; a row of trees; an act of treason*

(32)



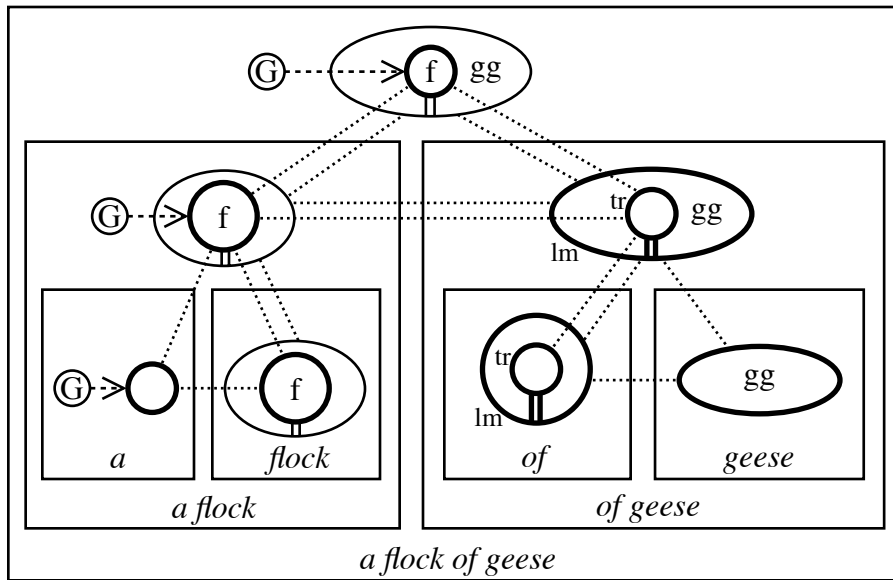
(33)



- (34)(a) GROUP: *a {flock / herd / set / collection / host} of X* [a flock of geese]  
 (b) CONFIGURATION: *a {bunch / pile / stack / heap / pool} of X* [a bunch of grapes]  
 (c) CONTAINER: *a {can / barrel / bag / cup / box / keg} of X* [several cans of soup]  
 (d) MEASUREMENT UNIT: *a {pint / gallon / pound / ton / foot / yard} of X* [two pints of milk]



(35)



- (36)(a) A **flock** of geese was flying overhead, shaped like a V.  
 (b) A flock of **geese** were flying overhead, flapping their wings in unison.  
 (c) Three **bags** of fertilizer were sitting in the shed.  
 (d) Three bags of **fertilizer** was spread around the garden.  
 (e) That **pile** of logs is blocking the road.  
 (f) One by one the pile of **logs** were sawed into boards.

(37)(i) [ [a **flock**]<sub>NML</sub> [of geese]<sub>PP</sub> ]<sub>NML</sub>      (ii) \*[ [a flock of]<sub>QNT</sub> **geese**]<sub>NML</sub>

- (38)(a) **A:** How many geese did you see?    **B:** A whole flock (\*of).  
 (b) **A:** How much fertilizer did you use?    **B:** Three bags (\*of).  
 (c) She has a bunch—in fact, a whole flock—of geese.  
 (d) She has a bunch (30 to be precise) of geese.  
 (e) \*She has a bunch of (30 to be precise) geese.

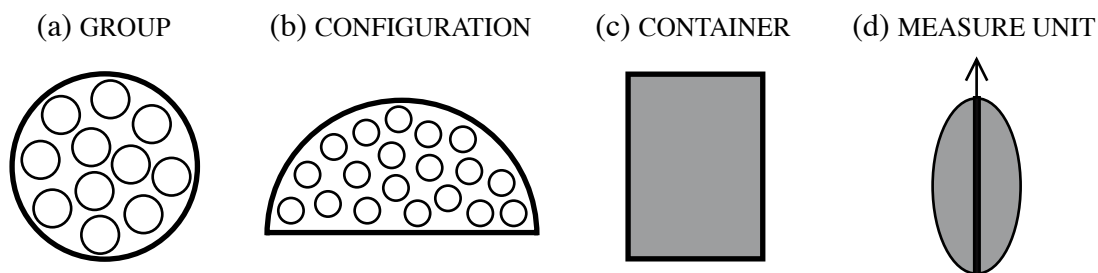
(39)(i) [ [a **flock**]<sub>NML</sub> [of geese]<sub>PP</sub> ]<sub>NML</sub>      (ii) [ [a flock]<sub>NML</sub> [of **geese**]<sub>PP</sub> ]<sub>NML</sub>

- (40)(a) **Metonymy:** an expression has *alternate profiles* on the *same conceptual content*.  
 (b) Highly prevalent and seldom even noticed, it amounts to alternate ways of *accessing* the content for different purposes.  
 (c) In (41)(e)-(f) the same nominal has two interpretations reflecting its *functions* in the matrix and relative clauses. Each imposes its own construal on the nominal content.  
 (d) This is unproblematic in *symbolic assemblies*, where the same element can participate in multiple structures reflecting different dimensions of organization.

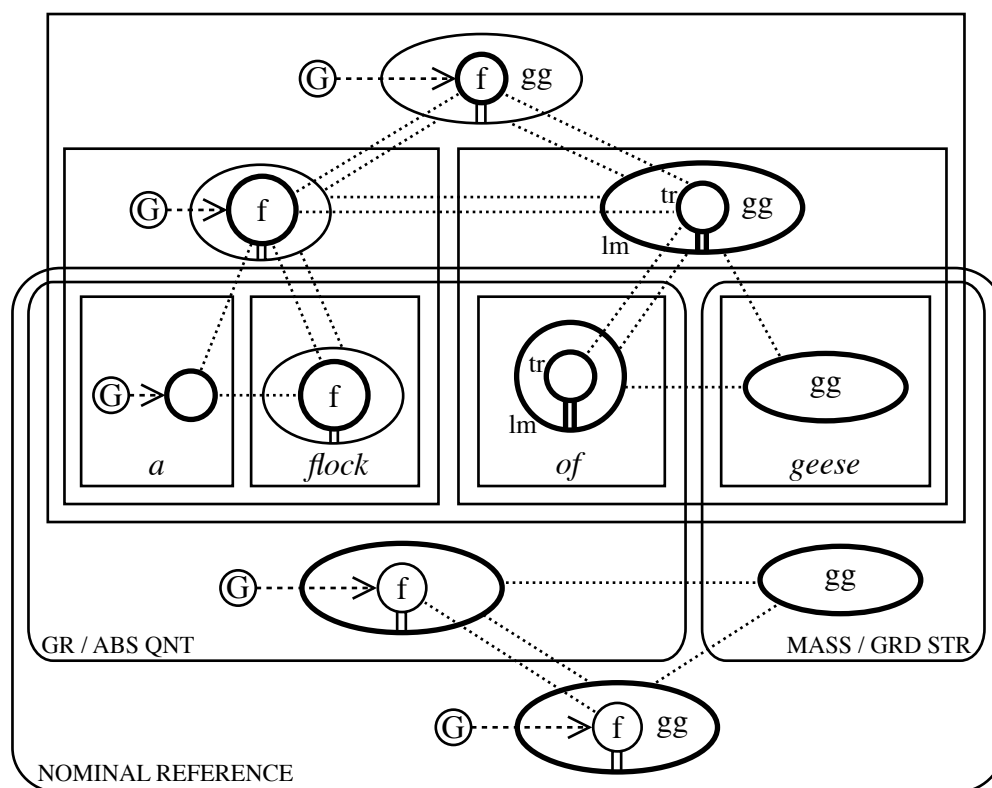
- (41)(a) *Picasso died in 1973.* [famous painter]  
 (b) *That Picasso sold for a record amount.* [a painting by Picasso]  
 (c) *Picasso is upstairs.* [collection of paintings by Picasso]  
 (d) *Picasso is on the bottom of this stack.* [catalog of Picasso paintings]  
 (e) *I spread **the three bags of fertilizer** that were sitting in the shed.*  
 (f) *We ate **the cans of soup** that were stacked in the pantry.*

- (42)(a) In (34), the metonymic alternation is facilitated by the two nouns being **co-extensive**.  
 (b) The metonymic shift is also facilitated by the second noun being the one of greater practical interest—its referent is what we **actually use**, most typically.

(43)



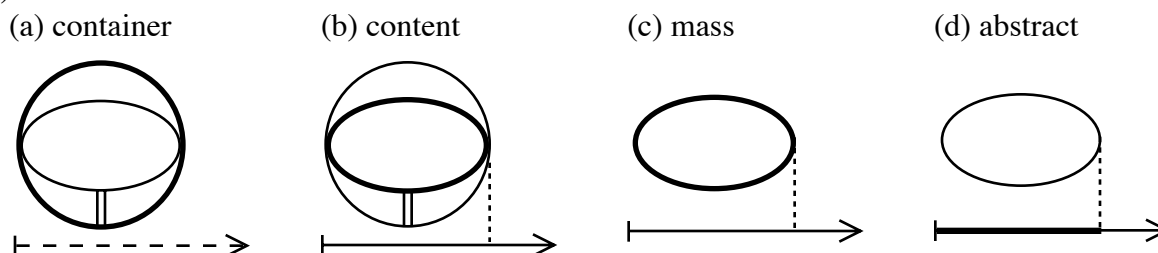
(44)



## D. Diachronic Perspective

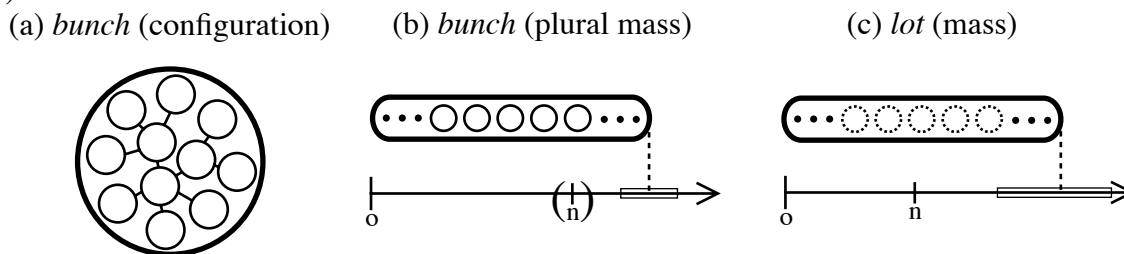
- (45)(a) The construction in (34) allows an open-ended set of quantifying expressions, which conventionalize and grammaticize to varying degrees.  
 (b) They provide a diachronic source for new absolute quantifiers, e.g. *a lot of*.  
 (c) Factors include a loss of analyzability (*a lot of* > *alotta*), the realignment of constituency with semantic function, and possible entry into the core quantifier system.  
 (d) A key step is the development of group, configuration, and especially container nouns into measurement units. E.g. *gallon* < 'pail'; *lot* < 'group of items for sale or auction'.

(46)



- (47)(a) *I put the **bottle** in the wine rack.*                      [container]  
 (b) *I drank the whole **bottle**.*                      [content of container (mass)]  
 (c) *They drank a whole **gallon**.*                      [mass (no container)]  
 (d) *A **gallon** is four quarts.*                      [abstract; measurement unit]

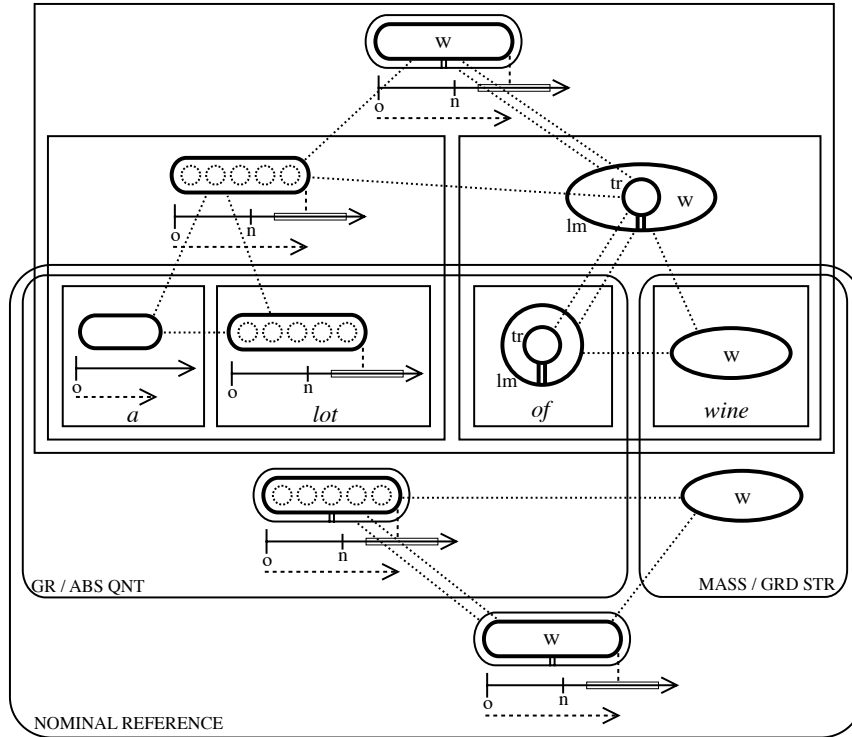
(48)



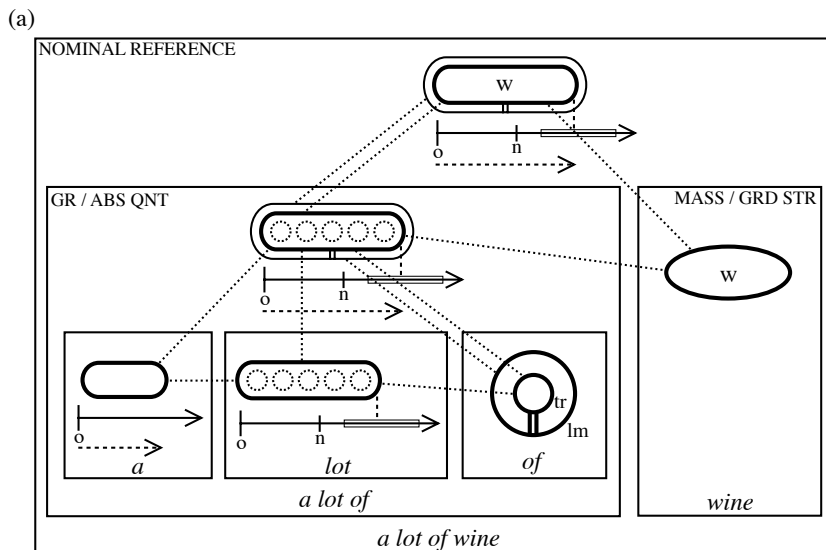
- (49)(a) *She cut a **bunch** of grapes off the vine.*                      [configuration]  
 (b) *She owns a **bunch** of hotels.*                      [plural mass]  
 (c) *\*She drank a **bunch** of wine.*                      [non-plural mass]  
 (d) *\*A **lot** of paintings was sold.*                      [group; no longer in general use]  
 (e) *A **lot** of paintings were sold.*                      [plural mass]  
 (f) *A **lot** of wine was consumed.*                      [non-plural mass]

- (50)(a) [ [a lot]<sub>NML</sub> [of **wine**]<sub>PP</sub> ]<sub>NML</sub>  
 (b) **A:** *How much wine was consumed?* **B:** *A lot (\*of).*  
 (c) *She has a lot—in fact, a whole flock—of geese.*  
 (d) *\*She has a lot of—in fact, a whole flock—geese.*  
 (e) *She has few ducks, but of geese she has a lot.*  
 (f) *She has a lot—of geese, that is.*  
 (g) *\*She has a lot of—geese, that is.*

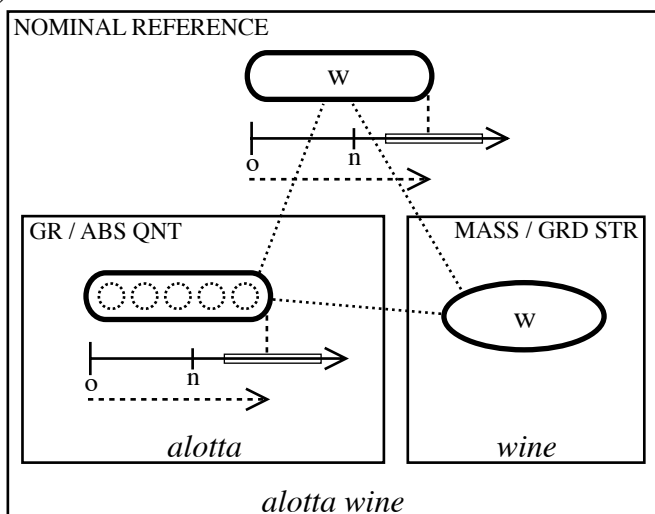
(51)



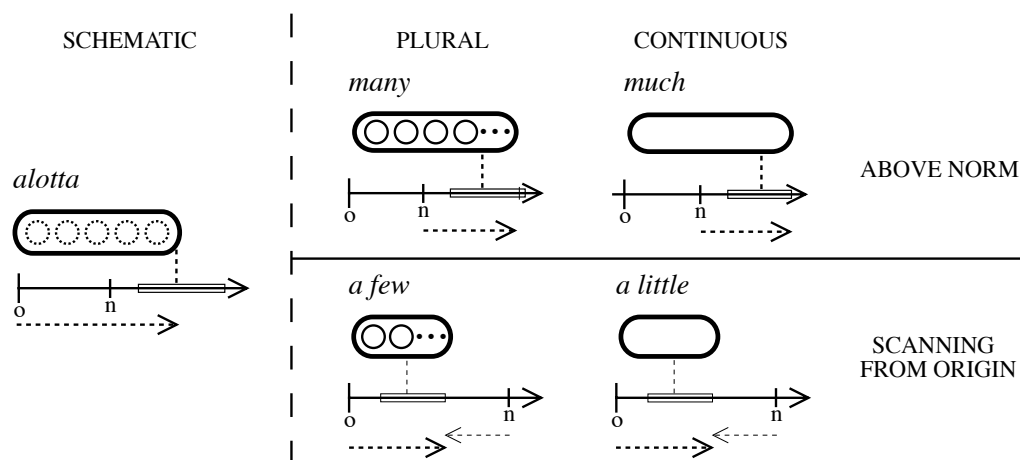
(52)



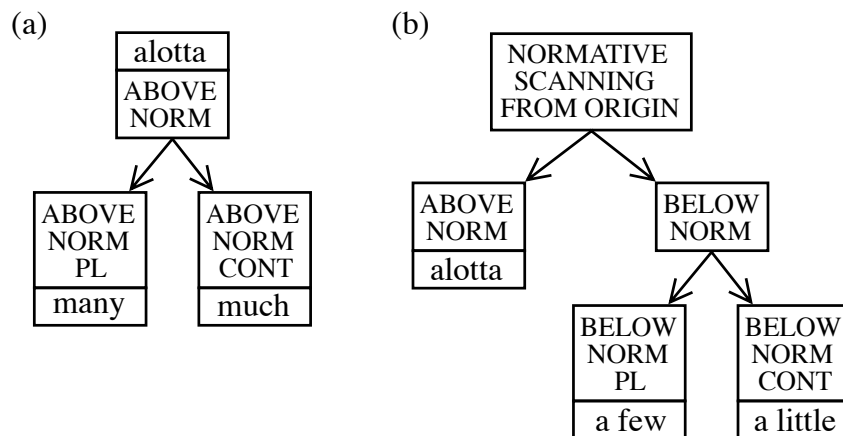
(b)



(53)



(54)



## References

- Barcelona, Antonio. 2002. On the Ubiquity and Multiple-Level Operation of Metonymy. In Barbara Lewandowska-Tomaszczyk and Kamila Turewicz (eds.), *Cognitive Linguistics Today*, 207-224. Frankfurt am Main: Peter Lang Verlag. Łódź Studies in Language 6.
- Dancygier, Barbara and Eve Sweetser. 2005. *Mental Spaces in Grammar: Conditional Constructions*. Cambridge: Cambridge University Press. Cambridge Studies in Linguistics 108.
- Fauconnier, Gilles. 1985. *Mental Spaces: Aspects of Meaning Construction in Natural Language*. Cambridge, MA and London: MIT Press/Bradford.
- Fauconnier, Gilles and Mark Turner. 2002. *The Way We Think: Conceptual Blending and the Mind's Hidden Complexities*. New York: Basic Books.
- Goldsmith, John and Erich Woisetschlaeger. 1982. The Logic of the English Progressive. *Linguistic Inquiry* 13.79-89.
- Israel, Michael. 2011. *The Grammar of Polarity: Pragmatics, Sensitivity, and the Logic of Scales*. Cambridge: Cambridge University Press. Cambridge Studies in Linguistics 125.
- Kövecses, Zoltán and Günter Radden. 1998. Metonymy: Developing a Cognitive Linguistic View. *Cognitive Linguistics* 9.37-77.
- Lakoff, George and Rafael E. Núñez. 2000. *Where Mathematics Comes From: How the Embodied Mind Brings Mathematics into Being*. New York: Basic Books.
- Langacker, Ronald W. 1990. *Concept, Image, and Symbol: The Cognitive Basis of Grammar*. Berlin and New York: Mouton de Gruyter. Cognitive Linguistics Research 1.
- Langacker, Ronald W. 1991. *Foundations of Cognitive Grammar*, vol. 2, *Descriptive Application*. Stanford: Stanford University Press.
- Langacker, Ronald W. 1997. Generics and Habituals. In Angeliki Athanasiadou and René Dirven (eds.), *On Conditionals Again*, 191-222. Amsterdam and Philadelphia: John Benjamins. Current Issues in Linguistic Theory 143.
- Langacker, Ronald W. 1999a. *Grammar and Conceptualization*. Berlin and New York: Mouton de Gruyter. Cognitive Linguistics Research 14.
- Langacker, Ronald W. 1999b. Virtual Reality. *Studies in the Linguistic Sciences* 29.77-103.
- Langacker, Ronald W. 2004. Remarks on Nominal Grounding. *Functions of Language* 11.77-113.
- Langacker, Ronald W. 2005. Dynamicity, Fictivity, and Scanning: The Imaginative Basis of Logic and Linguistic Meaning. In Diane Pecher and Rolf A. Zwaan (eds.), *Grounding Cognition: The Role of Perception and Action in Memory, Language and Thinking*, 164-197. Cambridge: Cambridge University Press.
- Langacker, Ronald W. 2008. *Cognitive Grammar: A Basic Introduction*. New York: Oxford University Press.
- Langacker, Ronald W. 2009a. *Investigations in Cognitive Grammar*. Berlin and New York: Mouton de Gruyter. Cognitive Linguistics Research 42.
- Langacker, Ronald W. 2009b. Metonymic Grammar. In Klaus-Uwe Panther, Linda L. Thornburg, and Antonio Barcelona (eds.), *Metonymy and Metaphor in Grammar*, 45-71. Amsterdam and Philadelphia: John Benjamins. Human Cognitive Processing 25.
- Langacker, Ronald W. 2010. A Lot of Quantifiers. In Sally Rice and John Newman (eds.), *Empirical and Experimental Methods in Cognitive/Functional Research*, 41-57. Stanford: CSLI Publications.
- Langacker, Ronald W. 2013. The Indefinite Article in Complex Quantifiers. In Mike Borkent, Barbara Dancygier, and Jennifer Hinnell (eds.), *Language and the Creative Mind*, 65-81. Stanford: CSLI Publications.
- Verhagen, Arie. 1986. *Linguistic Theory and the Function of Word Order in Dutch: A Study on Interpretive Aspects of the Order of Adverbials and Noun Phrases*. Dordrecht: Foris.