Category gradience in a feature-based generative approach: English pseudopartitives

Brussels Conference on Generative Linguistics 17 (BCGL 17)
Categories & Categorization
CRISSP at KU Leuven
December 12, 2024

Heidi Klockmann
heidi.e.klockmann@uia.no
University of Agder

1. Introduction

There is a tension between **formal approaches** which assume a discrete feature-based approach to categories (Zeijlstra 2023) and **cognitive-functional approaches** which view categories in terms of gradience or prototypes (Keizer 2023).

Gradient phenomena (Aarts 2004a, 2004b; Croft 2007) along with semi-lexical categories (Corver & van Riemsdijk 2001) challenge discrete approaches to categories. How should they be categorized?

Contributions of this talk:

- I explore the idea that **gradience arises from grammaticalization processes** and further that what appears to be gradient and continuous is in fact discrete—"small micro-steps" (Traugott & Trousdale 2010: 20).
- I make **a link between semi-lexicality and gradience**, suggesting that semi-lexicality may constitute subsective gradience (Aarts 2004a), i.e. gradience within categories (e.g. *thin* vs. *utter*).

Empirical domain: Early stage metaphorical pseudopartitives of quantity from the domain of water: *the pond of blogging, a geyser of nostalgia, a waterfall of hair*, *an ocean of ideas*.

How can the gradience of pseudopartitives described in cognitive-functional approaches (Keizer 2007; Brems 2011; Ten Wolde 2023) be accounted for in a feature-based generative approach?

Core analysis (inspired by Cavirani-Pots 2020's work on verbal semi-lexicality)**:**

(1)

Stage 0:	Stage I:	Stage IIa/IIb:	Stage III:
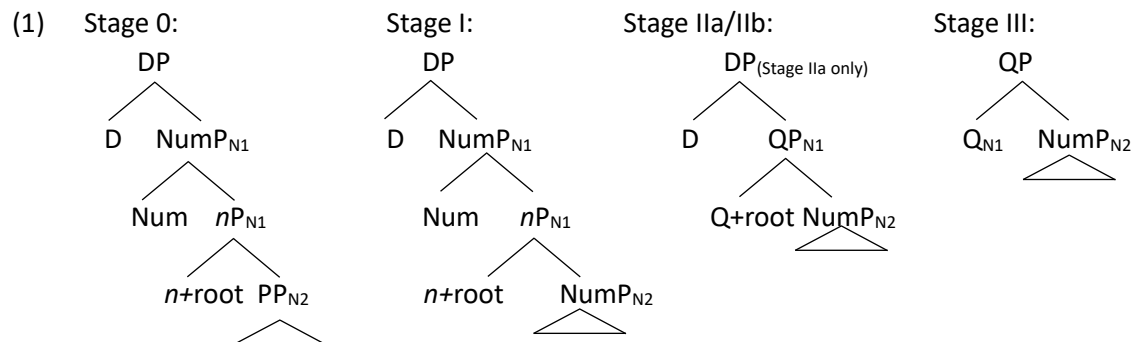
Examples extracted from the Corpus of Contemporary American English (Davies 2008-) will be marked with the tag "COCA".

2. Pseudopartitives (PsPs)

2.1 A generative perspective on PsPs: The construction and its properties

The PsP is a family of binominal constructions, where the N1 alters the denotation of the N2 in some way. **N1** refers to a semi-lexical or functional noun, while **N2** refers to the substance noun.

Vos (1999) suggests the classification below:

(2)   a.   Quantifier nouns (*lot*, *ton, deal*), e.g. *a lot of books, a ton of money*
       b.   Measure nouns (*kilo, liter, foot, drop*), e.g. *a liter of milk, two drops of liquid*
       c.   Container nouns (*bottle, bucket, glass, bag*), e.g. *a bucket of ice, a bag of books*
       d.   Part nouns (*piece, slice, part*), e.g. *a slice of cake, a piece of bread*
       e.   Collection nouns (*herd, bunch, group*), e.g. *a herd of cattle, a bunch of flowers*
       f.   Kind nouns (*kind, type, sort*), e.g. *two kinds of horses, that sort of idea*

Alexiadou, Haegeman, & Stavrou (2007) identify several properties of the PsP, which I will take as definitional for the English PsP.

Property #1: The N1 "designate[s] a certain quantity or amount or number, taken from the denotation of the lexical noun [N2]" (Alexiadou et al 2007: 402). The N1 is relational, requiring an N2 to quantify or measure. Kinn (2001) further recognizes co-extensiveness (N1 and N2 physically overlap).

(3)   a.   *A lot entered the shop.
       b.   #A flood entered the shop.

Property #2: The N2 is mass or plural, never singular. This can be modelled as cumulativity or divisibility (Vos 1999)

(4)   a.   A lot of input / mistakes / *mistake
       b.   A flood of input / mistakes / *mistake

Property #3: N1 and N2 are separated by a linker *of* in English. (This property distinguishes English PsPs from the PsPs of other Germanic languages which allow a juxtapositional option, e.g. Dutch.)

(5)   a.   *A lot mistakes
       b.   *A flood mistakes

(6)   Een   boel   mensen   *Dutch*
       A   lot   people
       'A lot of people'

Property #4: N2 is not a full DP.

(7)   *DP material on N2 (unacceptable)*
       a.   *A lot of the mistakes   (acceptable under a partitive reading)
       b.   *A flood of the mistakes   (unacceptable unless a partitive can be imagined)

(8) *QP material on N2 (unacceptable)*
   a. *A lot of two mistakes
   b. *A flood of two mistakes

(9) *AP material on N2 (acceptable)*
   a. A lot of hopeless mistakes
   b. A flood of hopeless mistakes

A **monoprojectional** account is commonly applied to juxtapositional PsPs (examples of the type in (6)) (see e.g. Alexiadou et al 2007), where the N1 forms part of the extended projection of the N2 as a semi-lexical noun (van Riemsdijk 1998), a Classifier (Stavrou 2003), or little *n* (Hankamer & Mikkelsen 2008). In my dissertation, I extended the monoprojectional account to English (Klockmann 2017).

The category of N1 remains a persistent and thorny question in pseudopartitive studies.

2.2 A cognitive-functional perspective on PsPs: Gradience and grammaticalization

Brems (2011) investigates "size nouns" (pseudopartitives of quantity) and identifies a range of uses with corresponding morphosyntactic properties. Depending on its use, the N1 may be more or less prototypical for a noun, suggesting gradience in a single lexical item.

Heap: (a) literal use (*heap* as a haphazard pile of objects)
   (b) quantifier use (*heap* as marking a relatively high number or amount of the N2)
   (c) valuing quantifier use (*heap* as implying negative semantic prosody, i.e. a negative
         evaluation)

(10) a. Each home […] was reduced to a heap of rubble (Brems 2011: 134, ex. 4.19)
   b. They went through my bags, searched me and asked a heap of questions (ibid: 140, ex. 4.27)
   c. […] he's been talking a heap of shit to me […] (ibid: 146, ex. 4.57)

The different uses were found to correlate with certain morphosyntactic properties (agreement, determiner choice, modifier choice).

Brems posits a grammaticalization account, with several processes:

- **Delexicalization** and expansion of the set of **N2 collocates** (more precisely a shift from very concrete uses, like *a heap of rubble* to abstract uses, like *a heap of questions,* and animate uses, like *heaps of people*)
- **Lexical persistence**, in terms of the source semantics of the N1
- **Reanalysis** from a head-modifier construction to a modifier-head construction:

   Head-modifier: ⟶ Modifier-head:
   [N1] [of N2]   [N1 of] [N2]

- **Synchronic layering**, such that the different constructions (before and after reanalysis) are simultaneously available to the speaker. Some of these may eventually be lost, leading to **divergence**

3. Methodology

3.1 Choice of N1

Metaphorical N1s were chosen to give a better understanding of the early stages of grammaticalization. These will be contrasted to established quantity N1s like *lot* and *bunch*, drawing on conclusions in Keizer (2007), Brems (2011), and Klockmann (2017).

The domain of water is relatively rich when it comes to metaphorical (quantity) PsPs:

(11)   Table 1: Examples of pseudopartitives with different water N1s, source COCA

Contained water	an **ocean** of information, a sea of magazine spreads, a puddle of pea puree, **ponds** of hog waste, lakes of ink
Horizontal motion	the flood of children, a wave of investigations, the river of rejects, that torrent of words, the stream of workers
Vertical motion	a **geyser** of creativity, a rain of ashes, BP's **waterfall** of cash, the trickle of information

Four N1s were selected for this talk: *pond, geyser, ocean, waterfall* and these were investigated exhaustively in the Corpus of Contemporary American English (Davies 2008-) (COCA).

Their dictionary entries (Merriam-Webster Dictionary) are as follows:

(12)   **Pond** (noun):
    1.   **A body of water** usually smaller than a lake (sometimes used with *the* to refer informally or facetiously to the Atlantic Ocean)

(13)   **Geyser** (noun):
    1.   A spring that throws forth intermittent jets of **heated water and steam**
    2.   (British) An apparatus for heating water rapidly with a gas flame (as for a bath)

(14)   **Waterfall** (noun):
    1.   a. A perpendicular or very steep descent of **the water of a stream**
        b. An artificial waterfall (as in a hotel lobby or a nightclub)
    2.   Something **resembling** a waterfall

(15)   **Ocean** (noun):
    1.   a. The whole body of **salt water** that covers nearly three fourths of the surface of the earth
        b. Any of the large **bodies of water** into which the great ocean is divided
    2.   A very large or unlimited **quantity** or **expanse**

Data is also being collected for the following nouns, which are not included in this talk: *flood, wave, sea, puddle, swamp, trickle, torrent, stream, river, rain*, and *lake*.

3.2 Dataset

The COCA was queried exhaustively for N1 forms immediately followed by an *of*. All hits were collected and coded. The table below summarizes the queries and number of examples.

(16)   Table 2: Data extracted from the COCA

N1	Query	Total hits	True hits
pond	pond* of	170	94
geyser	geyser* of	148	136
ocean	ocean* of	1243	951
waterfall	waterfall* of	153	123
	TOTAL	1714	**1304**

See **Appendix A** for the exclusion criteria. False positives and examples which were not in line with Alexiadou et al (2007)'s characterization of pseudopartitives were excluded.

3.3 Coding

Metadata: Year, genre, source, pre-text, key-words, and post-text were extracted from the COCA.

Coding and text extraction: The following properties were extracted or coded for each example:

- Determiner, if any, on N1
- Number features of N1 and N2
- Modifiers, if any, of N1 and N2
- Function of the pseudopartitive (e.g. subject, direct object, complement to P, etc.)
- For subjects and subject associates of agreeing verbs: Verbal agreement type (SV order, VS order, relative clause) and realization (SG, PL)
- *Inconsistently and non-exhaustively, the type of pseudopartitive (literal, container, imagined, visual, quantifier, etc.)*

4.   Corpus Results: Types of pseudopartitives

4.1 Head-modifier uses (Stage 0)

Literal uses

Point 1 of the dictionary definitions in (12)-(15) is taken as the literal meaning for each N1, roughly:

- **Pond**: 'a small body of water'
- **Geyser**: 'a jet of heated water and steam'
- **Waterfall**: 'steep descent of the water of a stream'
- **Ocean**: 'a large body of (salt) water'

In the corpus, literal uses of the N1 were found, with the N2 specifying properties of the water:

(17)   N2 a water substance (COCA)
   a.   a pond of mucky water
   b.   geysers of boiling water
   c.   a vast ocean of liquid water
   d.   the waterfall of cool and cleansing water

In addition, extensions of the literal meaning were also found, with the N2 specifying a non-water substance. These N2s shared physical properties with water (e.g. viscosity).

(18) N2 a non-water viscose substance (COCA)
    a. ponds of liquid tar
    b. geysers of natural gas
    c. oceans of toxic brines
    d. waterfalls of slime

Conclusion: Each N1 permits a literal use in which the N2 denotes physical contents of the N1.

Metaphorical uses

Metaphorical uses in which the N2 denotes an imagined substance of a metaphorical N1 were also found. Many of these made a visual comparison or were embedded in a larger metaphor. No size (quantificational) dimension seems to be implied.

(19) N2 an imagined substance of a metaphorical N1 (COCA)
    a. dipping my toes into the pond of blogging
    b. Raymie is a geyser of gossip and hard news
    c. the house and barn like black ships in an ocean of fields
    d. a tumbling waterfall of flaming red hair

Conclusion: Metaphorical extension allows the N2 to denote imagined contents of a metaphorical N1.

Analysis & predictions:

(20) Stage 0 (lexical):
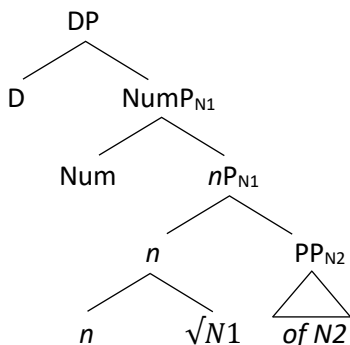
The PsP forms two extended projections.

The interpretation (literal, metaphorical) is determined pragmatically as a function of N1, N2, and the context.

Predictions:

- Verbal agreement targets N1.
- Determiner choice is free.
- N1 modifiers target the literal meaning of N1.

4.2 Quantificational modifier-head uses (Stages I-IIa)

Quantifying uses for *pond, geyser,* and *waterfall* are difficult to distinguish from metaphorical uses. Clear examples of quantification are most easily found with *ocean*.
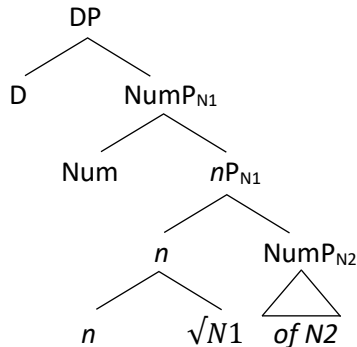
(21) Quantificational *ocean* (COCA)
    a. Belgium brews **an ocean of beer**—350 kinds.
    b. As doctors deal with **an ocean of paperwork** […], patients suffer.
    c. We are constantly overloaded with **endless oceans of information and complexity**
    d. But most people in business are selling **oceans of natural gas**, tons of gold, […]
    e. And **oceans of gratitude** for this house
    f. They spill **oceans and oceans of blood**, conquer and subjugate nation after nation, […]

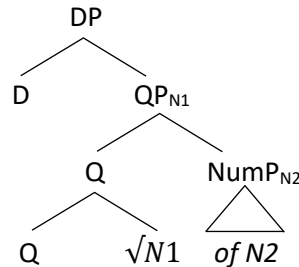g. The Russian people had anethesized themselves in **an ocean of vodka** and a mountain of cigarettes.

Conclusion: N1 *ocean* permits a quantificational use, where it indicates the quantity of N2.

Analysis & predictions:

(22)   Stage I (semi-lexical):   Stage IIa (semi-lexical):

```
            DP                                                                      DP
           /  \                                                                    /  \
          D   NumP_N1                                                             D   QP_N1
              /   \                                                                   /   \
           Num    nP_N1                                                             Q    NumP_N2
                  /   \                                                            / \      △
                 n    NumP_N2                                                     Q  √N1   of N2
                / \      △
               n  √N1   of N2
```

> The PsP forms one extended projection, with N1 forming part of the functional structure of N2.
>
> The interpretation is shifted, allowing a quantificational reading due to a lexical SIZE feature.
>
> Lexical persistence (cf. Verveckken & Cornillie 2012) determines the stage of N1.
>
> **Predictions:**
>
> - Verbal agreement varies depending on whether the N1 instantiates Stage I or Stage IIa.
> - Determiner choice is free.
> - N1 modifiers target the literal meaning of N1 in Stage I and the quantifier meaning in Stage IIa.

4.3 Ambiguous head-modifier / modifier-head uses (Stages 0-II)

There are numerous cases of ambiguity for each N1, where distinguishing between a metaphorical and quantificational reading is hard. Are these container-substance metaphors or quantifiers?

(23)   Ambiguous cases (metaphorical N1 vs. quantifier N1) (COCA)
   a. James' trilogy has made the hyper-jump from the little pond of books to the global ocean of pop culture.
   b. A geyser of terror came shooting up from my lower abdomen
   c. An ocean of asphalt greets visitors.
   d. I'm drowning in a waterfall of concerns that begins with my guilt over […]

Such ambiguity may support the shift to quantifier, with speakers reanalyzing the N1 as quantificational, particularly if it has a lexical SIZE feature that can be foregrounded.

Analysis & predictions: These are compatible with Stage 0, Stage I, and Stage IIa. They are predicted to pattern with any of these stages.

4.4 Established quantificational modifier-head uses (Stages IIb-III)

N1 *lot* is an established quantificational N1, based on Keizer (2007), Brems (2011), Klockmann (2017).

In Merriam-Webster dictionary, we can find the following relevant definitions of *lot*:

(24)   **Lot** (noun):
  4. a. a portion of land
  5. b. all the members of a present group, kind, or quantity → usually used with *the* (*sampled the whole lot of deserts*)
  6. a. a number of associated persons: SET (*fell in with a rough lot*)
     b. KIND, SORT (*The recruits were a sorry lot*)
  7. **a considerable quantity or extent** (*a lot of money, lots of friends*)

In Klockmann (2017, 2020), I discuss corpus results on *lot*'s interpretation 7, concluding the following:

- Quantifier *lot(s)* cannot control verbal agreement. Agreement always targets N2.
- Quantifier *lot(s)* cannot occur in definite environments. It is restricted to non-definites.
- Modifiers of *lot* target its quantificational meaning, usually by intensifying or evaluating the quantity.

(25)   Verbal agreement with quantifier N1 *lot* (N2 only)
  a. A lot of books were/*was on the table.
  b. Lots of sugar was/*were spilled.

(26)   Definiteness marking with quantifier N1 *lot* (indefinite only)
  a. A lot of mistakes
  b. *the lot of mistakes
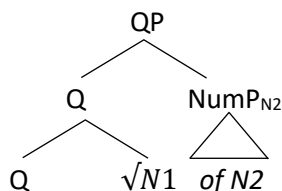
(27)   Modifiers of quantifier N1 *lot* (targets quantifier meaning)
  a. A whole lot of books
  b. A helluva lot of people

A similar pattern has been found for other N1s in work by Keizer (2007) and Brems (2011).

Analysis:

(28)   Stage IIb (semi-lexical):

QP
Q   NumP$_{N2}$
Q $\sqrt{}$N1   *of N2*

> The PsP forms one extended projection.
>
> Verbal agreement targets N2.
>
> Determiner choice is restricted to non-definites.
>
> N1 modifiers target the quantifier meaning.

While the claim that the DP layer is absent is based primarily on observation, it fits well in with the theoretical literature, which, as discussed in Alexiadou et al (2007) on pseudopartitives more generally, suggests that true quantification requires indefiniteness.

Langacker (2009) claims that *alotta* is heading towards monomorphemic status. This would place it in Stage III (functional), predicting similar morphosyntax to other possible Stage III quantifiers (*many*?).

(29) Stage III (functional):

```
              QP
             /  \
          Q_N1   NumP_N2
                  /\
                 of N2
```
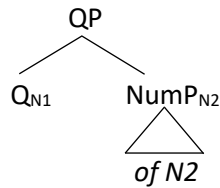
Lexical meanings for *lot* persist, but the lexical semantics of quantificational *lot* seems bleached as compared to an N1 like *ocean* (i.e. lack of lexical persistence). This suggests a case of **divergence**, or rather, that speakers treat these uses as **homophonous rather than polysemous**.

5. Corpus Results: Morphosyntactic patterns

5.1 Verbal agreement

Verbal agreement data is limited given that relevant examples must involve (a) a verb with the capacity to agree and (b) examples in which the N1 and N2 differ in number. The following reports only on examples which meet those conditions.

Table 3 summarizes agreement data for *pond, geyser*, and *waterfall*.

(30) Table 3: Verbal agreement (COCA)

N1	N1 target	N2 target
pond	4	1
geyser	4	0
waterfall	5	0

(31) *Pond*
  a. Factory-like farming of hogs results in **huge ponds of hog waste that foul** the air…
  b. **Ponds of water** also **were** agitated noticeably.
  c. **Giant ponds of rainwater has** gathered under many of the homes.

(32) *Geyser*
  a. There **are geysers of boiling water** scattered in an area of many square kilometers.
  b. **Geysers of steaming mud spurt** into the night sky.
  c. **A geyser of steam and gas sprays** out of the pinnacle of the Pyramid

(33) *Waterfall*
  a. There **is a waterfall of emotions** behind that laugh.
  b. **A waterfall of green globes tumbles** from the back of the dump truck.
  c. The sugar bowl topples, and **waterfalls of sugar spill** to the floor.

Example (31) may be an error. In an expanded search for other water N1s, no other cases of N2 agreement with a plural N1 were found.

(34)   Table 4: Verbal agreement with a variety of N1s (COCA, query 'N1 of N2 V')

SG N1	N1 target (SG)	N2 target (PL)
flood	31	9
wave	131	41
sea	12	4
river	10	1
rain	3	0
puddle	1	0
torrent	10	3
stream	67	34
trickle	7	6
lake	0	0

PL N1	N1 target (PL)	N2 target (SG)
floods	2	0
waves	55	0
seas	2	0
rivers	9	0
rains	1	0
puddles	4	0
torrents	5	0
streams	31	0
trickles	3	0
lakes	2	0

Conclusion I: *Pond, geyser,* and *waterfall* seem to largely require N1 agreement (but note the small sample size). The extension of their meaning has not interfered with their ability to control agreement. This places them in Stages 0 and I.

Table 5 summarizes the verbal agreement data for *ocean*. Examples in which the N2 contains a coordination of singular nouns have been excluded.

(35)   Table 5: Verbal agreement with *ocean*, counted per agreeing verb (COCA)

	Ocean (of N.PL)		**Oceans** (of N.SG)	
Agreement type	N1 target	N2 target	N1 target	N2 target
S-V order	6	2	7	0
V-S order	4	0	2	1
Relative clause	7	6	1	1
TOTAL	17	8	10	2

Caveats:

- *There*-expletives also permit default agreement in English, so examples like (37)c below may not involve true N2 agreement.
- Can the relative clause scope over N2 alone (cf. (37)b)? This may interact with agreement.

(36)   *Ocean(s)*, N1 agreement (COCA)
   a.   The **ocean** of lies in this world **is** deep!
   b.   Between Drew and me **was** an ever-moving **ocean** of celebrities.
   c.   There**'s** a vast **ocean** of grammatical phenomena that **is** largely automatic
   d.   **Oceans** of British ink **have** been spilled.
   e.   Gas giants like Uranus and Neptune have **oceans** of literal carbon that **are** dotted with floating icebergs…

(37)   *Ocean(s)*, N2 agreement (COCA)
   a.   It seemed as if an ocean of **men were** swarming toward them.
   b.   The farmers are only a drop in an ocean of **Southerners** who **are** establishing new ties with

the old Soviet bloc.
   c. There**'s** oceans of **trash** down by the border.
   d. ….walked through a Big Chain Fabric Store and seen the oceans of Special Sewing **Stuff**
       that**'s** available

Conclusion II: *Ocean* seems to prefer N1 agreement, but also permits N2 agreement (but note the small sample size). This places it in Stage I (N1 agreement) and Stage II (N2 agreement).

5.2 Determiners

Table 6 summarizes patterns of definiteness markers. "Indefinite" includes the indefinite article, the zero article, and *some*. "Definite" includes the definite article, demonstratives, and possessives.

(38) Table 6: Definiteness marking (COCA)

	Indefinite	Definite
pond	70	24
geyser	116	18
waterfall	100	23
ocean	661	290

Definiteness and indefiniteness are found with all types of uses for each N1 (literal, metaphorical, ambiguous/quantificational). Tables 7-9 provide examples, if found, for each N1 in its singular and plural forms in indefinite and definite environments.

(39) Table 7: **Literal** uses in singular and plural, indefinite and definite, per N1 (COCA)

N1	Indefinite	Definite
pond	a nearly dried up pond of mud	*the coagulated pond of blood surrounding her body*
ponds	huge ponds of hog waste	the quarry pits' ponds of black ice
geyser	I was hoping to see a geyser of hot water and steam.	*he took one last glance at the geyser of mist, haloed against the sunset*
geysers	there are geysers of boiling water	the fissures in the earth with their geysers of ash and steam
waterfall		stood underneath the waterfall of cool and cleansing water
waterfalls	*Rain, guttering down in waterfalls of slime*	
ocean	a deep, global ocean of liquid water	the great ocean of water
oceans	frothing oceans of liquid water	under those deep oceans of dark water

(40) Table 8: **Metaphorical** uses in singular and plural, indefinite and definite, per N1 (COCA)

N1	Indefinite	Definite
pond	We began as little tadpoles in a pond of knowledge.	dipping my toes into the pond of blogging
ponds	bankrupt or unstable franchises playing on frozen ponds of red ink	

geyser	a geyser of air erupted from the seam he had cut	the extravagant geyser of flowers and weeds and branches
geysers	Shells shattered, sending geysers of smoke, dirt, and flesh out of the earth	the small geysers of dirt thrown up by the detonation
waterfall	His cheeks were a waterfall of rubbery creases	the thick blond waterfall of hair
waterfalls	Twin waterfalls of fireworks flared to life on either side.	*From the Pachinko parlors came the metal waterfalls of victory.*
ocean	A dry ocean of tall and quivering grass	the stormy ocean of human life
oceans	Flaming oceans of poppies, daisies, and other flowers	the vast green oceans of grain

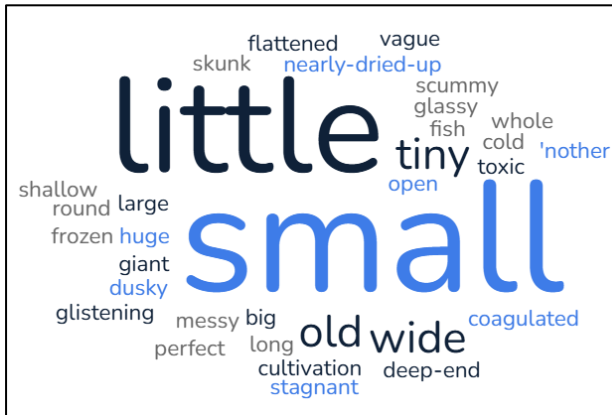(41) Table 9: **Ambiguous or quantificational** uses in singular and plural, indefinite and definite, per N1

N1	Indefinite	Definite
pond	this guy who is a big fish in a small pond of local cycling enthusiasts	this little stagnant pond of "parasitic critics"
ponds		In the small ponds of Political Correctness and literary theorists
geyser	A geyser of terror came shooting up from my lower abdomen	And the geyser of user growth it had tapped into
geysers	popcorn, soda, and geysers of nacho cheese	She left out the "accompanying geysers of vomit" part
waterfall	type in Crimes of the Clintons and you will get a waterfall of articles	I have seen her crushed by the waterfall of information that is her life.
waterfalls	The sugar bowl topples, and waterfalls of sugar spill onto the floor.	
ocean	so many officers, so many women, an ocean of conspiracies	To be noticed in that ocean of advertising
oceans	There have been oceans of ads in swing states	the oceans of California wines on supermarket shelves

Conclusion: All N1s permit both definite and indefinite determiners across the different uses. None of the N1s have reached Stage IIb.
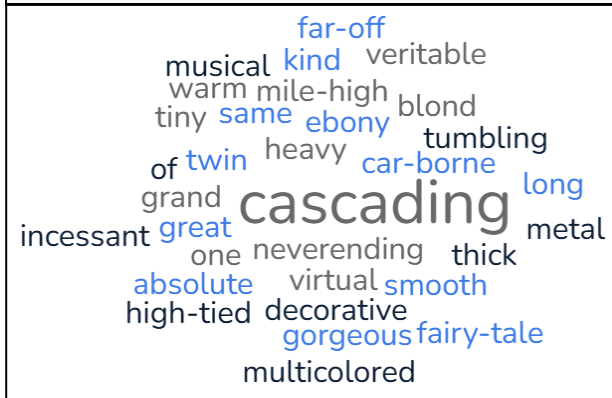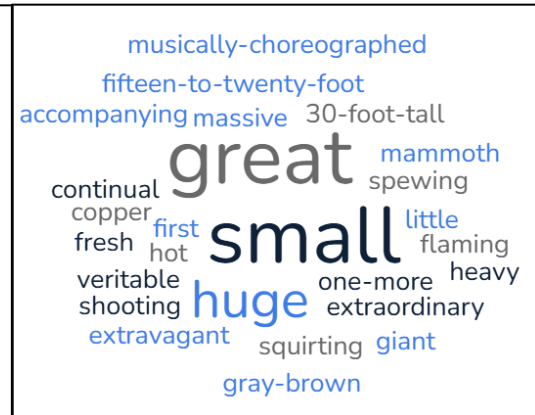
5.3 Modifiers

The word clouds below illustrate the N1 pre-modifiers, generated using https://simplewordcloud.com/ .

(42) **Pond** (47 tokens, 33 types)   **Geyser** (31 tokens, 26 types)

Waterfall (30 tokens, 29 types)

Ocean (219 tokens, 118 types)

Modifiers can target size for all N1s:

(43) Size modifiers (COCA)
    a. A little pond of piss formed.
    b. A mammoth geyser of steam and gas
    c. Holding great handfuls, great waterfalls of hair
    d. A vast ocean of literature has explored […];

But targeting quantity seems largely restricted to *ocean*:

(44) Quantity modifiers (COCA)
    a. Bob Hope comes on. 'A whole ocean of laughs', the advert says.
    b. Gretta's puppies, sitting in a whole ocean of pretty Australian puppies with blue and white coats and blue eyes
    c. They would drop us [all] in a whole ocean of shit.

All N1s also allow modifiers which target the literal meaning of the N1:

(45) Quality or evaluative modifiers (COCA)
    a. the long scummy pond of water
    b. musically choreographed geysers of water
    c. a mile-high waterfall of glass
    d. a roiling ocean of immigration

Finally, they all allow cases where the modifier appears to modify or evaluate [N1 + N2] or mark properties of the N2. This presumably stems from the co-extensiveness of N1 and N2 (Kinn 2001).

(46) Modifiers of (N1+)N2 (COCA)
    a. the coagulated pond of blood; a perfect pond of river stone
    b. that first hot geyser of blood; an extraordinary kind of geyser of aromas
    c. her ebony waterfall of hair; a gorgeous waterfall of human hair
    d. this hidden ocean of funds for research, development, and production of secret equipment; a fucking ocean of grief

Conclusion: Modification of N1 or [N1+N2] is consistent with Stages 0 and I. Modification of quantity is consistent with Stages II and III. The N1s *pond, geyser,* and *waterfall* are limited to Stages 0 and I, while *ocean* extends into Stage II.
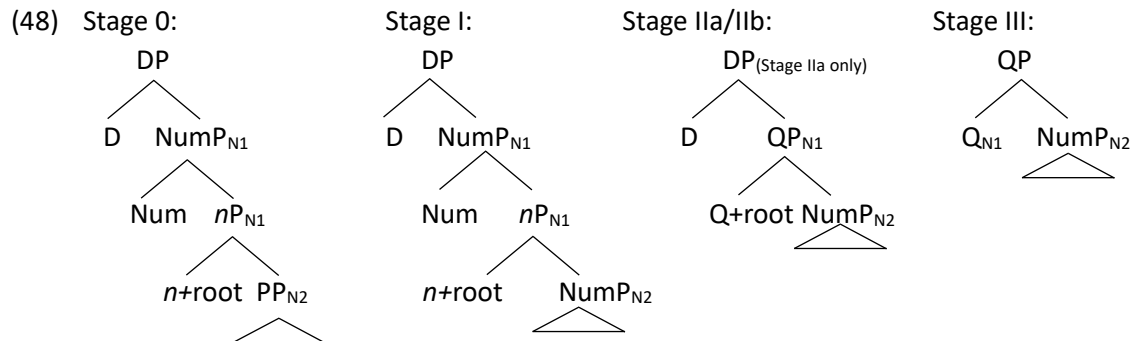
5.4 Summary

The table below summarizes the properties of each N1:

(47) Table 10: Summary of morphosyntactic properties

N1	Verbal agreement	Determiners	Modifier target
pond	N1	free	lexical semantics
geyser	N1	free	lexical semantics
waterfall	N1	free	lexical semantics
ocean	N1 or N2	free	lexical semantics, quantity
lot	N2	indefinite only	quantity

6. Analysis

Recall Stages 0-III:

(48)   Stage 0:   Stage I: Stage IIa/IIb: Stage III:

$$DP \rightarrow D, \; NumP_{N1}$$
$$NumP_{N1} \rightarrow Num, \; nP_{N1}$$
$$nP_{N1} \rightarrow n\text{+root}, \; PP_{N2}$$

$$DP \rightarrow D, \; NumP_{N1}$$
$$NumP_{N1} \rightarrow Num, \; nP_{N1}$$
$$nP_{N1} \rightarrow n\text{+root}, \; NumP_{N2}$$

$$DP_{(Stage\;IIa\;only)} \rightarrow D, \; QP_{N1}$$
$$QP_{N1} \rightarrow Q\text{+root}, \; NumP_{N2}$$

$$QP \rightarrow Q_{N1}, \; NumP_{N2}$$

- **Verbal agreement:** N1 agreement occurs in Stage 0 & I; N2 agreement occurs in Stages II & III.
- **Definiteness:** No restrictions at Stages 0-IIa; restricted to indefinites at Stages IIb-III.
- **Modification:** Lexical semantics of N1 or N1+N2 a target at Stages 0 & I; quantifier meaning a target at Stages II & III.

This places the N1s in the following stages:

N1	Stage 0	Stage I	Stage IIa	Stage IIb	Stage III
pond					
geyser					
waterfall					
ocean					
lot					

7. Conclusions

On the topic of gradience, gradualness, and grammaticalization, Traugott & Trousdale (2010: 20) write

> "[M]ost instances of change involve small micro-steps that
> are in fact discrete and therefore abrupt (in a tiny way)."

The main conclusions from the present work are the same:

> What looks like gradience among pseudopartitives is rather a series of micro-steps
> in the grammaticalization of a lexical category (N) to a functional category (Q).

> Categories, even gradient ones, are not continuous, but discrete.

Remaining issues:

One reviewer asked:

"[W]hat regulates which N1s can enter which structure (Stage I, II, IIb, etc.)[?] How are these lexical items stored so that they associate with the relevant structures, while regular nouns cannot?"

My tentative answer:

The pseudopartitive construction is quite productive:

(49) Pseudopartitive creativity (COCA)
    a. an explosion of blog posts
    b. a mountain of unsustainable public debt
    c. you're a fountain of crazy conversations
    d. a pyramid of rusty cars

If a noun has the right lexical semantics (e.g. a size component or intensity component to its meaning, along with the capacity for co-extensiveness), it can be coerced into Stage I.

If the N1 gains enough traction in the speech community as a quantifying N1, speakers may associate the root with a Q feature.

This may eventually lead to a reanalysis as the functional head Q (Stage III).

Some additional questions that arise are:

1. What commonalities can we find between the nouns which permit use as a quantifying N1 in a pseudopartitive? In other words, can we identify the lexical features that allow an N1 to enter the construction?
2. What is the role of metaphor in facilitating a shift from lexical noun to quantifying noun?
3. What role does the richness of lexical meaning play in halting (or not) grammaticalization?

Additional morphosyntactic questions, which I address in Klockmann (2020) are:

4. What is the *of* which occurs in English pseudopartitives?
5. How do plural forms appear in Stage II if there is no NumP?

8. References

Aarts, B. (2004a). Modelling linguistic gradience. *Studies in Language, 28*(1), 1-49.

Aarts, B. (2004b). Conceptions of gradience in the history of linguistics. *Language Sciences, 26*(4), 343-389.

Alexiadou, A., Haegeman, L., & Stavrou, M. (2007). *Studies in Generative Grammar: Noun Phrase in the Generative Perspective.* Berlin: Mouton de Gruyter.

Brems, L. (2011). *Layering of size and type noun constructions in English.* Mouton De Gruyter.

Cavirani-Pots, C. (2020). *Roots in progress: Semi-lexicality in the Dutch and Afrikaans verbal domain.* KU Leuven. LOT dissertation series.

Corver, N., & van Riemsdijk, H. (2001). *Semi-lexical categories: The function of content words and the content of function words.* De Gruyter.

Croft, W. (2007). Beyond Aristotle and gradience: A reply to Aarts. *Studies in Language, 31*(2), 409-430.

Davies, M. (2008-). *The Corpus of Contemporary American English: 450 million words, 1990-present.* Available online at http://corpus.byu.edu/coca/.

Hankamer, J., & Mikkelsen, L. (2008). Definiteness marking and the structure of Danish pseudopartitives. *Journal of Linguistics, 44*, 317-346.

Keizer, E. (2007). *The English Noun Phrase: The Nature of Linguistic Categorization.* Cambridge: Cambridge University Press.

Keizer, E. (2023). Word classes and gradience. In E. van Lier, *The Oxford handbook of word classes.* Oxford UP.

Kinn, T. (2001). *Pseudopartitives in Norwegian.* PhD Dissertation, University of Bergen.

Klockmann, H. (2017). *The design of semi-lexicality: Evidence from case and agreement in the nominal domain.* Utrecht University. LOT dissertation series.

Klockmann, H. (2020). The article a(n) in English quantifying expressions: A default marker of cardinality. *Glossa: a journal of general linguistics, 5*.

Langacker, R. (2009). *Investigations in cognitive grammar.* De Gruyter.

Stavrou, M. (2003). Semi-lexical nouns, classifiers, and the interpretation(s) of the pseudopartitive construction. In Y. D'hulst, & M. Coene, *From NP to DP (vol I), The syntax and semantics of noun phrases* (pp. 329-354). Amsterdam: John Benjamins.

Ten Wolde, E. (2023). *The English binominal phrase: A cognitive-functional approach.* Cambridge UP.

Traugott, E. C., & Trousdale, G. (2010). Gradience, gradualness, and grammaticalization: How do they intersect? In E. C. Traugott, & G. Trousdale, *Gradience, gradualness, and grammaticalization* (pp. 19-44). John Benjamins.

Trousdale, G., & Traugott, E. C. (2010). *Gradience, gradualness, and grammaticalization.* John Benjamins.

van Riemsdijk, H. (1998). Categorial feature magnetism: The endocentricity and distribution of projections. *Journal of Comparative Germanic Linguistics, 2*, 1-48.

Verveckken, K., & Cornillie, B. (2012). Un analisis cognitivo-funcional de la concordancia verbal con construcciones (pseudo)partitivas del tipo [N1 + de + N2]. *Revue Romane, 47*, 219-257.

Vos, R. (1999). *The Grammar of Direct and Indirect Partitive Constructions.* PhD Dissertation, Tilburg University.

Zeilstra, H. (2023). Word classes in Minimalist syntax. In E. van Lier, *The Oxford handbook of word classes.* Oxford UP.

9. Appendix A

Exclusion criteria:

False positives were excluded; most false positives fell into one of the classes below:

- Proper nouns and acronyms:
  - *The rangers at Pond of Safety*
  - *Texas Southern University's Ocean of Soul marching band; OCEAN of human personality* (acronym in the context)
  - *the Waterfall of Diana in the lobby*

- Examples with a different constituency:
  - *Where'd you get these? The ocean of course*
  - *Stripping the oceans of all life*

- Examples in which the N2 was a possessor or other construction, usually qualities:
  - *the ponds of East Texas; a farm pond of about 50 acres*
  - *the geysers of Iceland; geysers of vast proportions*
  - *the oceans of the world; a global ocean of about 100km in depth*
  - *the waterfalls of Bear Island; three waterfalls of varying heights*

Further, in keeping in line with the Alexiadou et al (2007)'s characterization of pseudopartitives, examples which did not fit existing definitions of pseudopartitive were excluded. Some of these examples merit further study, but were not included here:

- N2s marked by a determiner, quantifier, or determiner-like pre-modifier (*both, other*)
  - *The deep pond of the living room; the placid pond of his forehead*
  - *Miserable, flee-infested geyser of a dog*
  - *The ocean of a bed; the quiet ocean of the night; oceans of these "generic, ordinary spaces"; the vast ocean of her ignorance; an ocean of $1.1 trillion; oceans of both blood and tears*
  - *A long waterfall of a run; the waterfall of her still-raven hair*

- Examples in which the N2 was a pronoun or clause
  - *A waterfall of me just telling her things that I'd kept in secret*
  - *I cooked an ocean of it; a drop in the ocean of what needs to be done*