

Adjectives and Determiners of Distribution

Kjell Johan Sæbø

March 7, 2016

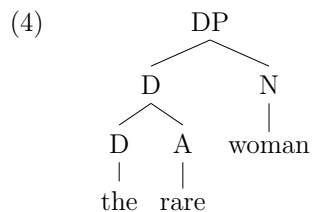
1 The plot

Gehrke & McNally (2015) identify a class of readings of frequency adjectives like *occasional*, where they help form definite DPs and express ‘nontemporal distribution’. In addition to *occasional*, which has a temporal reading as well (in indefinite DPs), this class includes *odd* and *rare*. Some examples:

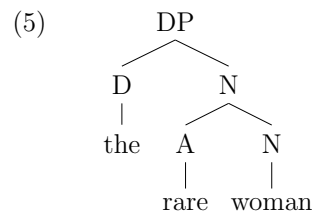
- (1) There are virtually no life forms here, save the occasional shrimp, urchin or wayward fish.
- (2) Even up here there were places of cultivation and the odd hamlet.
- (3) We passed moored boats manned by fishermen and the rare woman.

Note that the nouns are sortal and would seem to denote sets of individuals. This sets English apart from German, where only ‘participant nouns’ coerced to event descriptions can occur in similar DPs, only with a temporal reading.

Gehrke & McNally (2015) argue against Zimmermann (2003), who treats the article and the adjective as a complex determiner.



Zimmermann (2003)



Gehrke & McNally (2015)

Let us try to determine who is right. This entails examining the two theories, but it will also take us into some new facts.

2 The scene

What is commonly called the *adverbial reading* was first noted by Bolinger (1967), who brought the example (6a) and paraphrased it with (6b).

- (6) a. An occasional sailor strolled by.
- b. A sailor strolled by occasionally.

Since, such cases have been discussed by, i.a., Stump (1981), Larson (1998), Zimmermann (2003), and DeVries (2010).

Gehrke & McNally (2015) argue that the term ‘adverbial reading’ is not apt: the term *nontemporal reading* fits the facts better. This reading is confined to the three adjectives in (1)–(3) and the definite article.¹ Examples like (7) depend on (coercion to) event nouns (and then the reading is temporal).

- (7) Under my slight covering I still felt a sporadic drop.

So the English scene can be set to:

the	rare	P, e.g., pearl
	odd	
an	occasional	

Table 1: the nontemporal AD environment

3 The suspects

There is Malte Zimmermann (2003) and his associates (Larson and Stump), and then there is Gehrke and McNally (2015) working on their own.

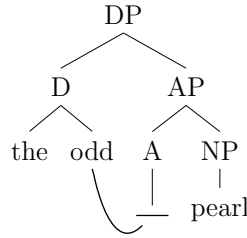
¹Actually, *occasional* allows the nontemporal reading with the indefinite article too.

3.1 Determiner analysis

According to the former, article and adjective form a complex determiner.

This can be brought about by having the adjective syntactically incorporate into the determiner, in the same way as objects can incorporate into verbs... (Morzycki 2015: 63f.)

Here is Morzycki's illustration of the situation:



He comments (p. 65):

Once formed, the complex determiner can have access to clause-level material in the same way quantificational determiners can.

In a slightly altered notation, Zimmermann's analysis of *the occasional* is:

$$(8) \quad \llbracket infreq \rrbracket = \lambda P_{(et)} \lambda R_{e(vt)} \exists x \exists e \ e \sqsubseteq e^* \wedge P(x) \wedge R(x)(e) \wedge \\ \forall x', x'', e', e'' [P(x') \wedge P(x'') \wedge R(x')(e') \wedge R(x'')(e'')] \rightarrow \\ [e' = e'' \vee \exists t \ \tau(e') \supset t \supset \tau(e'') \vee \tau(e'') \supset t \supset \tau(e')]$$

Gehrke & McNally (2015: 865f.) level a criticism at the determiner approach under the label Unexpected scope facts: a sentence like (9), they say, entails that there were few trout rising; under Zimmermann's determiner analysis, however, it only entails that I saw few trout rising.

(9) I worked my way upstream, only seeing the occasional trout rising...

Actually, this intuition seems to depend on a postnominal participle phrase like *rising* (and a verb like *see*); scopally, (8) seems quite right for (10):

(10) I caught the occasional bass and a few northern pike, but...

Adding to this and other empirical challenges for the determiner analysis its “not otherwise motivated” syntactic movement and “nonstandard” semantic type, Gehrke & McNally “see no reason to maintain such an analysis”.

3.2 Modifier analysis

According to them, whereas temporal ADs (like *monthly*, *frequent*, *sporadic*) (mainly) modify predicates of **event kinds**, what nontemporal ADs modify are predicates of **entity kinds**. Here is the meaning of AD *odd* (*i* is a time):

$$(11) \quad \llbracket odd \rrbracket^i = \lambda P \lambda x_k P(x_k) \wedge \mathbf{distribution}(\{y:R(x_k)(y) \text{ at } i\}) = low$$

Since $P(x_k)$ is a conjunct in the definiens, this can be simplified to a definition in terms of a predicate of entity kinds:²

$$(12) \quad \llbracket odd \rrbracket^i = \lambda x_k \mathbf{distribution}(\{y:R(x_k)(y) \text{ at } i\}) = low$$

The meaning of the noun *car* and the meaning of the phrase *odd car* are:

$$(13) \quad \llbracket car \rrbracket^i = \lambda x_k \mathbf{car}(x_k)$$

$$(14) \quad \llbracket odd car \rrbracket^i = \lambda x_k \mathbf{car}(x_k) \wedge \mathbf{distribution}(\{y:R(x_k)(y) \text{ at } i\}) = low$$

Gehrke & McNally contend that the definite article in *the odd car* is possible and in fact necessary because *odd car* denotes a singular set of kind entities: “when the FA combines with a kind description, it returns the description of the unique kind on whose realizations distributional conditions are imposed. Thus, nominals containing these FAs should reject any determiner that does not entail uniqueness, hence the restriction to *the*... (2015: 862)

$$(15) \quad \llbracket the odd car \rrbracket^i = \iota x_k \mathbf{car}(x_k) \wedge \mathbf{distribut}(\{y:R(x_k)(y) \text{ at } i\}) = low$$

Now comes a verb like *passed* and the composition with it:

$$(16) \quad \llbracket passed \rrbracket^i = \lambda x_\alpha \lambda e_k \mathbf{passed}(x_\alpha)(e_k)$$

$$(17) \quad \llbracket the odd car passed \rrbracket^i = \\ \lambda e_k \mathbf{passed}(\iota x_k \mathbf{car}(x_k) \wedge \mathbf{distribut}(\{y:R(x_k)(y) \text{ at } i\}) = low)(e_k)$$

DeVries (2010) notes a problem facing an analysis along these lines: the car kind must not only be occasionally realized, it must be occasionally realized in passing events. More generally, it is unclear just what it means that the set of entities realizing a certain kind at a given time has a low distribution.

²Gehrke & McNally (2015) make a point of defining nontemporal ADs not as predicates but as predicate modifiers, thereby supposedly explaining the fact that they cannot be used predicatively; this is a superficial point, though, as (11) is just a notational variant of (12) given the intersective composition principle employed for temporal ADs.

4 New clues

Den lange, lange sti over myrene og ind i skogene, hvem har traakket op den? Manden, mennesket, den første som var her. Det var ingen sti før ham. Siden fulgte et og andet dyr de svake spor over moer og myrer og gjorde dem tydeligere, og siden igjen begyndte en og anden lap å snuse stien op og gå den når han skulde fra fjæld til fjæld og se til sin ren. (Knut Hamsun: Growth of the Soil)

DPs like the odd animal, the occasional Saami correspond to Norwegian DPs where the counterpart to the odd or the occasional is a complex determiner, ei(-) og anna(-) – mostly anyway.

This is a prima facie argument for a determiner analysis. Moreover, a careful comparison with English AD DPs and with other Norwegian determiners can throw light on whether the specific analysis offered by Zimmermann (2003) is satisfactory, for the former or for ei(-) og anna(-). In fact, we will see that

- the modifier analysis offered by GM (Gehrke & McNally 2015) is more adequate for those comparatively rare cases where the occasional does not correspond to ei(-) og anna(-), and that
- Z(immermann's analysis) works better for all the other AD cases and for the Norwegian determiner but needs to become both stronger and more flexible to fit the facts.

4.1 Narrow ADs

GM predict a local, narrow-scope effect of the adjective: regardless the V(P), the set of entities realizing the extension of the noun at the given time is to have a low distribution. Thus the paradigm case (18) entails that there were few sailors about; sailors were sparsely distributed in the given situation.

(18) The occasional sailor strolled by.

DeVries (2010), by contrast, maintains that what is entailed is that there were few sailors strolling by; there may have been other sailors sitting around, say.

Actually, this issue is difficult to decide here, and the reason may be that this is a borderline case between clearly narrow and clearly wide AD construals.

A clearly narrow construal is illustrated by (19):

(19) From the occasional window you have a magnificent view towards the coast.

There were only a few windows, from any of which the view was magnificent. (20) illustrates a clearly wide construal:

(20) Most of the houses were still dark, though a light shone in the occasional window.

There were many windows, though only a few in which a light shone. – One example where an ambiguity can be felt is (21):

(21) There are geraniums in the occasional window box.

On the narrow reading, there are few window boxes but geraniums in all; on the wide reading, in a few of the many window boxes there are geraniums.

So what makes the paradigm example (18) a borderline case? It is a **thetic** statement, in the sense of Ladusaw (1994), McNally (1998) and Sæbø (2007): the VP does not make much difference anyway.

The narrow/wide distinction is correlated with a different closest determiner counterpart in English: *the few* for narrow, *a few* for wide.

Only on the wide reading does *the occasional* correspond to *ei(-)* og *anna(-)*.

It seems, then, as if GM and Z have been studying two different objects, and the modifier analysis is in fact more or less appropriate for the narrow case.

4.2 Wide ADs

According to Z, *the occasional* NP (or German *ein(-) gelegentliche(-)* NP) is a **pluractional quantifier**, it says things about a possible plurality of events.

$$(8) \quad \llbracket infreq \rrbracket = \lambda P_{(et)} \lambda R_{e(vt)} \exists x \exists e \ e \sqsubseteq e^* \wedge P(x) \wedge R(x)(e) \wedge \\ \forall x', x'', e', e'' [P(x') \wedge P(x'') \wedge R(x')(e') \wedge R(x'')(e'')] \rightarrow \\ [e' = e'' \vee \exists t \ \tau(e') \supset t \supset \tau(e'') \vee \tau(e'') \supset t \supset \tau(e')]$$

The meaning of this determiner has two parts: (i) existential quantification, (ii) universal quantification: all existing events are temporally surrounded.

Two issues arise:

1. Are **events** and their **times** universally relevant?
2. What is the relevant notion of **surroundedness**?

4.2.1 Domains and dimensions

Events and times are relevant for many cases but by far not for every case. Here are two ei(-) og anna(-) cases that are amenable to the Z analysis:

- (22) En og annen abbor beit på.
one-and-other-perch bit on
- (23) Om natta lusker et og anna rådyret gjennom hagen.
in night sneaks one-and-other-roedeer through garden

At times there were bitings, and every two bitings had a time between them, separating them. Likewise, each sneaking by a deer stands alone, isolated.³

However, this pattern fails to generalize to cases like (24) and (25):⁴

- (24) Ei og anna stjerne lyste enno.
one-and-other-star shone yet
- (25) The building was gloomy and lifeless in the winter darkness. Lights were on in the occasional window, but the main entrance was locked.

Two or more stars probably shone simultaneously, and there may have been light in two windows at the same time. So what is a low distribution about?

Two-dimensional space: every two shining stars must be separated, and each lighted window must be surrounded. By what, I will return to below.

The next example shows that space can be three-dimensional as well.

- (26) Mange overbefolkede vann inneholder en og annen storfisk.
many overpopulated lakes contain one-and-other-bigfish

These cases would seem to call for a spatial trace function from individuals x to locations $loc_t(x)$ at a time t (see Cisneros et al. 2013, Henderson 2014).

³ Whether the notion of betweenness is strong enough, concerning times or whatever, is discussed in subsubsection 4.2.3.

⁴ Icelandic: *í einstaka gluggum*

4.2.2 Restrictor and nuclear scope

Although the determiner ei(-) og anna(-) is not a proportional determiner – it would not be felicitous in a presentation construction then – it still shows an ambivalence parallel to *many* (cf. Kamp & Reyle 1993: 460) regarding the preferred way to divide NP and VP into ‘restrictor’ and ‘nuclear scope’. Compare:

- (27) En og annen flyktning er bosatt i kommunen.
one and other refugee is resident in municipality
- (28) En og annen flyktning er innvilget opphold i Norge.
one and other refugee is granted sojourn in Norway

On a natural interpretation of (27), each of the (few) refugees resident in the municipality is surrounded by (many) non-refugee residents; by contrast, on the more natural interpretation of (28), each of the (few) refugees granted a right of sojourn is surrounded by (many) refugees not granted that right.

4.2.3 Surroundings

The closest relation to ei(-) og anna(-) is noen få ‘a few’. But a comparison throws into relief the former’s spatio-temporal low-**distribution** criterion.

- (29) a. Det var fisk på nokre få onglar berre.
it was fish on some few hooks only
- b. Det var fisk på ein og annan ongelen berre.
it was fish on one and other hook only

Here is a case of one-dimensional space – a linear order. (29a) is true if the (few) hooks with fish on them are concentrated, say, at one end of the line; for (29b) to be true, the (few) hooks with fish on them must show a spread across the line. This contrast is still more pronounced in (30):

- (30) a. Jeg har noen få sider igjen av boka.
I have some few pages left of book
- b. ?Jeg har ei og anna side igjen av boka.
I have one and other page left of book

(30b) implies that the pages of the book are not read consecutively.

4.3 Generalized distribution

Z's analysis is too specific: it focuses narrowly on events and their runtimes. Conversely though, GM's core analysis is not specific enough:

$$(31) \quad \text{distribution}(\{y:\mathcal{R}(x_k)(y) \text{ at } i\}) = \text{low}$$

We need a synthesis where one-dimensional time is generalized to one-, two- or three-dimensional space or time, much in the spirit of Gawron (2006).

Let us, following von Stechow (2006), assume a separate type for locations l , and also, following Cisneros et al. (2013), that locations form a mereology: l can be a **sum location**.

The following analysis, patterned on (8), suggests itself for the spatial case:

$$(32) \quad \llbracket ei \text{ og } anna \rrbracket = \lambda P_{(et)} \lambda Q_{(et)} \exists x P(x) \wedge Q(x) \wedge \forall x [P(x) \wedge Q(x)] \rightarrow [\exists l \mathcal{R}(l) \wedge loc(x) \sqsubset l \wedge \neg \exists y \neq x P(y) \wedge Q(y) \wedge loc(y) \sqsubset l]$$

This is a formulation where neither times nor worlds are taken into account. $\mathcal{R}$ is a contextually determined location set, intuitively the reasonable radius around $loc(x)$ (see Cisneros et al. 2013). In cases like (20) and (25), $\mathcal{R}$ will see to it that l encompasses neighbouring windows.

A suitably underspecified formulation will leave room for events and times.

Note that as tentatively defined, the determiner is **intersective**; asymmetric readings must be assumed to arise as pragmatic inferences.

5 Conclusions

In a sense, the conflict between GehrkeMcNally and Zimmermann is illusory: they have been looking at two different sides of the *odd-rare-occasional* coin. On one side, it is indeed a DP internal matter; Gehrke and McNally capture this reading. But on the side that most often comes up, the VP plays a role, and Zimmermann captures this reading.

Both capture the interpretation they are after imperfectly, however. Taking $c(l)$ ues from the Norwegian determiner *ei og anna*, I have tried to show that a more general and at the same time more precise analysis is necessary and also possible. The definition (32) may still need refinement –

References

- Bolinger, Dwight (1967)** Adjectives in English: Attribution and predication. *Lingua* 18, 1–34.
- Cisneros, Carlos et al. (2013)** Alone. Ms., University of Chicago.
- DeVries, Karl (2010)** *Frequency adjectives*. BA thesis, Michigan University.
- Gawron, Jean Mark (2006)** Generalized Paths. *Proceedings of Semantics and Linguistic Theory* 15, 135–150.
- Gehrke, Berit and Louise McNally (2011)** Frequency adjectives and assertions about event types. *Proceedings of Semantics and Linguistic Theory* 19, 180–197.
- Gehrke, Berit and Louise McNally (2015)** Distributional modification: the case of frequency adjectives. *Language* 91(4), 837–868.
- Henderson, Robert (2014)** Swarms: Spatiotemporal grouping across domains. Ms., Wayne State University.
- Kamp, Hans and Uwe Reyle (1993)** *From Discourse to Logic*. Kluwer.
- Ladusaw, William (1994)** Thetic and categorical, stage and individual, weak and strong. *Proceedings of Semantics and Linguistic Theory* 4, 220–229.
- Larson, Richard (1998)** Events and modification in nominals. *Proceedings of Semantics and Linguistic Theory* 8, 145–168.
- McNally, Louise (1998)** Stativity and Theticity. In Susan Rothstein (ed.), *Events and Grammar*, Dordrecht: Kluwer, 293–307.
- Morzycki, Marcin (2015)** *Modification*. Cambridge University Press.
- Sæbø, Kjell Johan (2007)** Focus interpretation in Thetic statements: Alternative Semantics and Optimality Theory Pragmatics. *Journal of Logic, Language and Information* 16, 15–33.
- Schäfer, Roland (2007)** On frequency adjectives. *Proceedings of Sinn und Bedeutung* 11, 555–567.
- Stechow, Arnim von (2006)** Spatial Prepositions in Interval Semantics. Ms., University of Tübingen.
- Stump, Gregory (1981)** The interpretation of frequency adjectives. *Linguistics and Philosophy* 4, 221–257.
- Zimmermann, Malte (2003)** Pluractionality and complex quantifier formation. *Natural Language Semantics* 11(3), 249–287.