

Frequency adjectives and assertions about event types

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1 Introduction

The Phenomenon

Frequency adjectives (FAs) such as *occasional* and *rare* intuitively characterize events.

But: They combine not only with nouns that reference events (e.g. agentive nouns like *sailor* in (1), deverbal nouns like *destruction*, or non-derived nouns referring to something like an event, e.g. *trip*), but also with nouns that do not make reference to an event by themselves (see (2)).

And: They can induce three different readings (Stump 1981; Larson 1998; Zimmermann 2003; Schäfer 2007).

- (1) *The internal reading*
That claim was made by an occasional sailor.
= That claim was made by someone who sails occasionally.
- (2) *The generic reading* (examples from Stump 1981)
 - a. An occasional beer is good for you.
= Drinking a beer occasionally is good for you.
 - b. An occasional beer tastes good on a hot day.
≠ Drinking a beer occasionally tastes good on a hot day.
- (3) *The adverbial reading* (first observed in Bolinger 1967)
The/an occasional sailor strolled by.
= Occasionally, a sailor strolled by.

Note the composition problems with the adverbial reading: the FA appears to scope outside of the nominal it occurs in - not true for e.g. (1) or (2-a).

NB: The distinction between these readings is purely descriptive for now.

The Challenge

To account for each of these (sub)readings with an analysis that

- provides a unified semantics for the adjective on all readings, and
- keeps the syntax simple.

More specifically: We want to account for the adverbial reading without having to treat the FA as a determiner (cp. Stump 1981; Larson 1998; Zimmermann 2003).

Our goal

- Start with Schäfer (2007), the analysis that comes closest to meeting the challenge,
- Point out its problems, and
- Argue that these problems can be solved if sentences like (3) are treated as assertions about *event types*, rather than *event tokens* as is usually assumed on event semantic analyses.

Structure of the talk

- Closer look at the data
- The determiner analysis, Schäfer's analysis, and their problems
- The proposal and its advantages
- Unresolved issues and conclusions

2 Clarifying the data

2.1 The basic classes of adjectives and nouns, and restrictions on their combinations

The adjectives: Two relevant parameters:

- Fixed vs. variant (i.e. contextually-determined) periodicity (e.g. *daily* vs. *occasional*)
- Within variant periodicity, relative (in)frequency (e.g. *occasional* vs. *frequent*)

The nouns: Three relevant classes:

- Eventuality-denoting nouns: *visit, swimming, discussion, etc.*
- Participant-denoting nouns: *recipient, sailor, employee, etc.*
- Other nouns: *beer, car, chair, etc.*

NB: We will use the terms EVENT NOUNS, PARTICIPANT NOUNS, and SORTAL NOUNS, respectively, to refer to these classes.

Restriction on the internal reading: Only participant nouns yield the internal reading (Schäfer 2007).

(4) *The internal reading*

- a. A frequent sailor won the regatta. = one who sails frequently
- b. A frequent recipient of awards took the Rotary Club prize again.
= one who frequently receives awards
- c. A frequent visit \neq a particular visit which happens frequently
- d. A frequent letter \neq a particular letter which Vs/is V'd frequently

\Rightarrow *Observations:*

1. On the internal reading the nominal describes an individual whose identity is stable across the events that support the applicability of the FA.
2. The FA describes the frequency with which the nominal description holds of the individual it describes.

Observation 1 no doubt blocks this reading with event nouns unless those nouns can be understood as describing types of events (cf. *The meeting of the Consell de Direcció is a frequent meeting*); and

Observation 2 makes the interpretation pragmatically implausible for sortal nouns.

Restriction on the generic reading: All kinds of adjective-noun combinations can yield the generic reading, if the NP is an argument to a generic predicate (Carlson 1977).

(5) *The generality of the generic reading*

- a. A yearly / an occasional / a frequent check-up is essential.
- b. A yearly / an occasional / a frequent visitor is great to have.
- c. A daily / an occasional / a frequent cup of coffee is good for you.

(6) *Stage-level predicates: The FA is not (obviously) generically interpreted.*

- a. ??An occasional cup of coffee has left a stain on the table. (Stump 1981)
- b. The Premier Division-based Scotland side were only beaten, in fact, by a goal of almost tragic proportions, conceded when an infrequent error was characteristically punished by Riedle. (from the BNC)

⇒ *Observation:*

Two standard approaches to indefinite generics: kind approach (Dayal 2004; Müller-Reichau 2006) or generic quantification approach (e.g. Heim 1982). Here, some reference to a kind seems inevitable.

(7) *Some (informal) problematic attempts*

- a. (Gen x : x is a cup of coffee and you occasionally drink x)[x is good for you]
⇒ a token cup of coffee cannot be drunk more than once
- b. (Gen e : e is a cup-of-coffee-drinking and e is occasional)[e is good for you]
⇒ a token event cannot be occasional

(8) *One that might work, if we could get the details right*

(Gen x : x realizes the “cup of coffee drunk occasionally” kind)[x is good for you]

Restrictions on the adverbial reading:

- Only event nouns systematically yield the adverbial reading with the three kinds of adjectives.

(9) *The adverbial reading with event nouns*

The group held a weekly / an occasional / a frequent discussion session.

- With non-event nouns:

- Contra Stump (1981), Zimmermann (2003) (following Larson 1998) claims that the adverbial reading is only possible with *infrequency* adjectives; we follow Stump (see also Moltmann 1997; Schäfer 2007).
- Only relative *infrequency* adjectives (*occasional*, *infrequent*, *rare*, and *odd*) systematically yield the adverbial reading with *singular* non-event nouns.
- A plural noun is needed to get the adverbial reading with relative frequency adjectives (e.g. *frequent*), see (10).
- With both fixed frequency and relative frequency adjectives, the adverbial reading is subject to additional (poorly understood) restrictions, see (11).

- (10) *Adjectives of relative frequency: adverbial reading → plural noun*
- ??She wrote a frequent letter to her mother.
 - She wrote frequent letters to her mother. = Frequently, she wrote letters to her mother.
 - ??She baked a frequent batch of cookies.
 - She baked frequent batches of cookies. = Frequently, she baked batches of cookies.
- (11) *One example of an additional restriction*
- They saw a daily train on their way to school.
≠ Every day they saw a train on their way to school.
 - ??They saw frequent trains on their way to school.
 - ??They read frequent books.

⇒ *Questions:*

- Does this singular/plural difference call for a different treatment of the adverbial reading with the two kinds of variant FAs? Larson (1998) and Zimmermann (2003) think so. We, like Schäfer (2007), are not convinced.
- Do the differences between event nouns and the other nouns entail that the adverbial reading with the latter has to be dealt with in a fundamentally different way? Stump (1981) treated them uniformly; Zimmermann (2003) assumes they are different. We follow Stump.

2.2 Restrictions on the determiner

Internal reading: No restrictions; see (12).

- (12) A/Some/One/That/Each frequent sailor I know owns his own boat.

Generic and adverbial readings: Restricted to the (in)definite articles and semantically bleached possessives; see (13), (14).

- (13) *Determiner restrictions with the generic reading*
- An/the/your occasional beer is good for you.
 - ??Each occasional beer is good for you.
 - ??Two occasional beers are good for you.
- (14) *Determiner restrictions with the adverbial reading*
- We saw an/the/your occasional car on the road.
 - ??We saw each occasional car on the road.
 - ??We saw two/many occasional cars on the road.

NB: Stump (1981) claims that the generic reading allows a full variety of determiners, but his examples are problematic (15).

- (15)
- No daily news program can match this one.
 - Every daily cup of coffee is good for you.

⇒ *Observation:*

The differences between the generic and adverbial readings are smaller than previously claimed.

3 Previous accounts

Two previous approaches to the adverbial reading:

- The “determiner” analysis (Stump 1981; Larson 1998; Zimmermann 2003) - not extended to the internal or generic readings
- A unified analysis for all three readings (Schäfer 2007)

3.1 The determiner analysis of the adverbial reading

We take Zimmermann (2003) (who closely follows Larson 1998) as representative: the FA syntactically incorporates into the determiner, which forms with it a complex pluractional quantifier INFREQ over event-individual pairs.

(16) An/the occasional sailor strolled by.

a. *Syntax* (Zimmermann 2003, 271, minor details modified):

$[\text{IP}[\text{QP}[\text{Q the/an+occasional}_1][\text{NP } t_1 \text{ sailor}]]_2[\text{VP } t_2 \text{ strolled by}]$

b. *Semantics* (Zimmermann 2003, 272, notation slightly modified):

(i) $[\text{an/the occasional}] \Rightarrow [\text{INFREQ}\langle e, x \rangle]$

(ii) $[\text{INFREQ}\langle e, x \rangle] =$

$\lambda Q \lambda S. \exists \langle e, x \rangle [\text{part-of}(e, e^*) \wedge Q(x)]$

$[S(e, x) \wedge \forall \langle e', x' \rangle, \langle e'', x'' \rangle [S(e', x') \wedge S(e'', x'') \wedge Q(x') \wedge Q(x'')]$

$[(e' = e'') \vee (e' \neq e'' \wedge \exists t [\text{between}(t, \tau(e'), \tau(e''))])]]]$

(where e^* = a contextually given event, $\tau(e)$ = the temporal trace of e)

(17) *Full analysis of (16)* (Zimmermann 2003, 273)

a. $\exists \langle e, x \rangle [\text{part-of}(e, e^*) \wedge \text{sailor}(x)]$

$[\text{stroll_by}(x, e) \wedge \forall \langle e', x' \rangle, \langle e'', x'' \rangle [\text{stroll_by}(e', x') \wedge \text{stroll_by}(e'', x'') \wedge \text{sailor}(x') \wedge \text{sailor}(x'')]$

$[(e' = e'') \vee (e' \neq e'' \wedge \exists t [\text{between}(t, \tau(e'), \tau(e''))])]]]$

b. There are some pairs $\langle e, x \rangle$, where e is a part of a contextually given event e^* , and x a sailor, such that e is a strolling-by of x , and any two strolling-by events of a sailor occur at separate points in time.

NB: The “**between**” condition is intended to guarantee that the events making the sentence true are distributed over time and not clumped together.

Correct predictions of the determiner analysis

- The scope facts: The quantifier contributed by the FA scopes over the nominal’s variable.
- The restriction to *a, the*, and bleached possessives: Zimmermann proposes that these determiners lack semantic content, and that complex quantifier formation is only possible if the determiner lacks such content.
- The “un-adjectival” behavior of FAs identified in Stump (1981).

Putative un-adjectival behavior of FAs on the adverbial reading:

The FA must appear external to other adjectives (18).

- (18) a. A well-dressed occasional sailor strolled by. (Stump 1981, 248)
 b. ≠ An occasional well-dressed sailor strolled by.

But: Other adjectives are similarly picky (19).

- (19) *Two well-dressed other sailors strolled by.

The FA does not conjoin with other adjectives (20).

- (20) *An occasional and well-dressed sailor strolled by. (Stump 1981, 249)

But: With event nouns such coordinations are attested:

- (21) There are occasions when, because of outside atmospheric conditions, an occasional and brief down draft will occur within the chimney and fire box...
 (<http://www.patentstorm.us/patents/6298844/description.html>)

The FA cannot appear in the antecedent of a common-noun anaphor (22).

- (22) a. John saw an occasional sailor, and Bill saw one, too. (Stump 1981, 248)
 b. ≠ Occasionally John saw a sailor, and occasionally Bill saw one, too.

But: Other adjectives manifest similar behavior.

- (23) a. ?A well-dressed different sailor strolled by.
 b. A different and well-dressed sailor strolled by. [cf. (21)]
 c. Mary saw a sailor. John saw a different sailor, and Bill saw one (≠ a different sailor), too.

Conclusion: The data show that FAs on the adverbial reading are different from typical adjectives, but do not force the conclusion that they are determiners.

Problems for the determiner analysis

- There is no independent motivation for the determiner-like syntax and semantics for FAs beyond the facts in (18)-(22).
- If the FA is interpreted as a quantifier, it is not clear why it must be accompanied by a real determiner (cf. the ungrammaticality of (24)).

- (24) *Occasional sailor strolled by.

- It is not obvious how to extend the semantics in (16-b) to the other readings.
- There is no account for the failure of the FA to scope over the main verb in examples like (25).

- (25) a. Idling beside the propped-open kitchen window he registers the occasional car swishing past, three stories below. (from the BNC)
 b. = He registers the cars that swish past, which they do occasionally.

⇒ Zimmermann discusses similar cases in German and argues that they do not involve INFREQ because of independently motivated restrictions on quantifier raising from object position in German.

However, this cannot be extended to English because such restrictions on QR are not motivated. Yet we think this use of *occasional* should be analyzed in the same way as other examples of the adverbial reading.

3.2 A first attempt at a unified analysis: Schäfer (2007)

The basic idea: The FAs on all three readings contribute the same core semantics, namely frequency quantification over events, although there are small variations in the compositional details.

NB: We discuss only the generic and adverbial readings here.

Key assumptions:

- There are event kinds, event individuals, and event stages in the ontology (see section 4 for motivation for event kinds).
- FAs with event nominals (on all three readings) modify an event variable associated with that nominal.
- FAs with non-event nominals involve coercion of the noun the FA modifies (e.g. *a cup of coffee*) so that it is interpreted as a contextually determined event description (e.g. *drinking a cup of coffee*); these and all other contextually valued variables are prefixed with \uparrow .
- FAs introduce probability functions.

FAs as probability functions

- The FA introduces a 4-place probability function $p(e_k)(x_k)(\Theta)(i)$ where
 - e_k , x_k , and Θ supply parameters for the proposition that there is a realization of e_k involving x_k in role Θ : $\exists e_s. \exists x_s. \mathbf{R}(e_k)(e_s) \wedge \Theta(x_s)(e_s)$.
 - i is the interval which is checked for the realization of this proposition.
 - * Fixed for fixed FAs (e.g. *daily* for *daily*, abbreviated below as **1d**)
 - * Determined pragmatically for variant FAs, calculated by the function **i**:
 $\mathbf{i}(e_k)(x_k)(\Theta) =_{def}$ the prototypical checking interval for event kind e_k , with object kind x_k in role Θ (abbreviated below as **I**, with parameters assumed to be supplied)
- The value of $p(e_k)(x_k)(\Theta)(i)$ is a probability range $[m, n]$.

The generic reading: *occasional* introduces an event kind variable and an event kind description $\uparrow E$ which coerces the nominal containing the FA into a description of a kind of event with a particular frequency of realization (here, an occasional drinking or other action involving a cup of coffee).

(26) (Schäfer 2007, 564)

- a. *occasional*₂ \Rightarrow
 $\lambda P \lambda e_k. \exists x_k. \uparrow E(e_k) \wedge P(x_k) \wedge p(e_k)(x_k)(\uparrow \Theta)(\mathbf{I}) = [.3, .6]$
- b. [*occasional* [*cup of coffee*]]:
 $\lambda e_k. \exists x_k. \uparrow E(e_k) \wedge \mathbf{cup_of_coffee}(x_k) \wedge p(e_k)(x_k)(\uparrow \Theta)(\mathbf{I}) = [.3, .6]$

The adverbial reading: *occasional* introduces an existentially quantified event kind variable.

Schäfer’s intuition: A stage of a kind of object is involved in stages of a kind of event with a particular realization frequency; the main event parameter is identified with the main event parameter of the sub-categorizing verb or is inferred contextually (here, an instance of the kind of sailors which occasionally strolls by, strolled by).

(27) (Schäfer 2007, 564f.)

- a. *occasional*₃ ⇒
 $\lambda P \lambda x_k. \exists e_k. \uparrow E(e_k) \wedge P(x_k) \wedge p(e_k)(x_k)(\uparrow \Theta)(\mathbf{I}) = [.3, .6]$
- b. [*occasional* [*sailor*]]:
 $\lambda x_k. \exists e_k. \uparrow E(e_k) \wedge \mathbf{sailor}(x_k) \wedge p(e_k)(x_k)(\uparrow \Theta)(\mathbf{I}) = [.3, .6]$

Advantages of the analysis

- No unmotivated syntactic movement or syntactic category for the FA
- Standard semantics for the adjective as property of properties

Problems

- The semantics for the FA is not entirely unified.
- It is not clear that a probabilistic semantics will guarantee the appropriate number of event realizations.
- It is not clear why $\uparrow E$ should get its value from context on the generic reading but have to be identified with the main predicate on the adverbial reading.
- The analysis of the generic reading should not force the nominal to denote an event description, see (28).

(28) An occasional cup of coffee tastes good.

⇒ Schäfer’s analysis predicts that this means that drinking a cup of coffee occasionally tastes good (Stump 1981, and see (2-b)).

- Schäfer does not show how the semantics for these nominals is combined with the semantics for the rest of the sentence to yield the right readings, and in the case of the adverbial reading in particular it is not obvious how to proceed based on what he says.

Under the assumption that sentences introduce existential quantification over event tokens, Schäfer’s analysis produces a problematic reading (*NB*: for illustration we treat the indefinite nominal as an existential quantifier; this is not crucial and see below):

- (29) a. *occasional sailor*: $\lambda x_k \exists e_k [\uparrow E(e_k) \wedge \mathbf{sailor}(x_k) \wedge [p(e_k)(x_k)(\uparrow \Theta)(\mathbf{I}) = [.3, .6]]]$
- b. *an occasional sailor*:
 $\lambda P \exists x_k \exists e_k [\uparrow E(e_k) \wedge \mathbf{sailor}(x_k) \wedge [p(e_k)(x_k)(\uparrow \Theta)(\mathbf{I}) = [.3, .6]] \wedge P(e, x_k)]$
- c. *strolled by*: $\lambda x \exists e [\mathbf{strolled_by}(e, x)]$
- d. *An occasional sailor strolled by*:
 $\exists x_k \exists e_k [\uparrow E(e_k) \wedge \mathbf{sailor}(x_k) \wedge [p(e_k)(x_k)(\uparrow \Theta)(\mathbf{I}) = [.3, .6]] \wedge \exists e. \mathbf{strolled_by}(x_k, e)]$

⇒ Schäfer wants $\uparrow E$ to be identified as the “strolling by” event kind.

How to relate this description to the token strolling-by event described by the sentence is unclear.

4 The proposal

Key claims:

- We analyze sentences like (2) and (3) as existential quantifications over event *types* (or *kinds* - for present purposes we use the terms interchangeably).
- The FA combines with a nominal that describes a kind; it does not change the description of that kind itself but simply imposes conditions on the realizations of the kind.

Independent motivation for event types:

- Event types are natural to expect if we assume:
 - Events form a subsort in our ontology of (token) individuals (Reichenbach 1947; Davidson 1967; Parsons 1990),
 - Kinds or types form another subsort in that ontology (Carlson 1977), and
 - As a rule, any token in the ontology should be the realization of some type in that ontology.
- Event types have an analog in e.g. the Situation Semantics notion of event type (Barwise and Perry 1983), though the formal details are quite different.
- Empirical arguments for event types as an ontological category have been made in e.g. Landman and Morzycki (2003); Ginzburg (2005).

Further assumptions related to kinds/types:

- Nouns can denote properties of kinds, in addition to properties of token entities (McNally and Boleda Torrent 2004; Déprez 2005; Müller-Reichau 2006).
- Verbs likewise can denote properties of event types, in addition to properties of event tokens.
- Argument positions of predicates denoting properties of event types can be filled either by kind-level or token-level arguments (i.e. it is as conceptually sound to talk of an event type involving Popeye as it is to talk of one involving sailors).
- While we will not assume that all predications over event types need entail the existence of token events that realize the type (cf. e.g. *The trial of the suspect never actually took place*), as a rule the assertion that an event type exists in a world w will entail the existence of at least one token event in w that supports the event type's existence.
- The existence of some kinds depends on not merely the existence of one token realization of the kind, but on the existence of a set of tokens possibly with additional properties - e.g., participation in some event with a certain spatial or temporal periodicity (Stump 1981, see).

Assumptions about determiners:

- The indefinite article: as in Kamp (1981) or Heim (1982) (cp. the acceptability of indefinite kind terms in e.g. *Martin invented a pumpkin crusher*, Dayal 2004; Müller-Reichau 2006, example due to B. Geurts)
- The definite article: a maximality operator yielding the unique maximally general kind described by the nominal

(30) **The common pieces of the analysis**

- a. *occasional*: $\lambda P \lambda x_k [P(x_k) \wedge \forall e_k, Q[Q(e_k, x_k) \rightarrow \text{the distribution of the pairs } \langle e, x \rangle \text{ such that } Q(e, x) \text{ and } \mathbf{R}(e, e_k) \text{ and } \mathbf{R}(x, x_k) \text{ and } Q(e, x) \text{ supports the existence of } Q(e_k, x_k) \text{ is occasional}]]$
(hereafter abbreviated: $\lambda P \lambda x_k [(\mathbf{occasional}(P))(x_k)]$)
- b. *occasional N*: $\lambda x_k [(\mathbf{occasional}(\mathbf{N}))(x_k)]$
- c. *an occasional N*: $(\mathbf{occasional}(\mathbf{N}))(x_k)$
- d. *the occasional N*: $\mathbf{MAX}x_k [(\mathbf{occasional}(\mathbf{N}))(x_k)]$
- e. *strolled by*: $\lambda x_\alpha \lambda e_\alpha [\mathbf{strolled_by}(e_\alpha, x_\alpha)]$ (and analogously for other predicates)

(31) *The adverbial reading with the indefinite nominal*

- a. An occasional sailor strolled by.
- b. $\exists x_k, e_k [(\mathbf{occasional}(\mathbf{sailor}))(x_k) \wedge \mathbf{strolled_by}(e_k, x_k)]$

NB: Assume semantic composition with indefinites as in DRT or File Change Semantics, existential closure binds off all free individual and event variables here and below.

(32) *The adverbial reading with the definite nominal*

- a. The occasional sailor strolled by.
- b. $\exists e_k [\mathbf{strolled_by}(e_k, \mathbf{MAX}x_k [(\mathbf{occasional}(\mathbf{sailor}))(x_k)])]$

Unlike Schäfer, we do not assume that the generic reading always involves coercion; see (33):

(33) *The generic reading (illustrated with definite article)*

- a. The occasional beer tastes good.
- b. $\exists e_k [\mathbf{tastes}(e_k, \mathbf{MAX}x_k [(\mathbf{occasional}(\mathbf{beer}))(x_k)], \mathbf{good})]$

We predict that coercion will only arise in cases where it is independently expected to arise, as in (34) (see e.g. Asher 2007):

- (34)
- a. The occasional beer is good for you.
 - b. $\exists e_k \exists e'_k [\mathbf{good_for_you}(e_k, e'_k) \wedge \uparrow E(e'_k, \mathbf{MAX}x_k [(\mathbf{occasional}(\mathbf{beer}))(x_k)])]$

Advantages of the proposal

- No unmotivated syntactic movement or syntactic category for the FA
- Property of properties denotation for the FA; “un-adjectival” behavior unsurprising given the details of the semantics
- Unified account of the adverbial and generic readings of FAs, extendable to the internal reading and (25-a)
- Correct prediction that FAs only combine with the definite or indefinite article, without requiring the stipulation that these articles are contentless:
 - The articles that appear with FAs are precisely those that are compatible with basic kind terms.
 - The analysis is further supported by the fact that bare plurals are acceptable:
She wrote occasional letters to her mother. (see also (35-d))

5 Some remaining issues

- The lexical restrictions on the combination possibilities of different kinds of FAs with different kinds of nouns, and the respective restrictions on the availability of particular readings, mentioned in section 2, are still not fully understood and require further data analysis.
- It is not clear what explains the different restrictions on the distributions of fixed and variant FAs.
- It is not clear why FAs resist combining with mass non-event nouns; see (35).

- (35)
- a. There was occasional trouble.
 - b. ??Occasional beer is good for you.
 - c. ??Occasional water dropped from the ceiling.
 - d. Occasional drops of water fell from the ceiling.

⇒ It seems that the nominal has to be able to individuate an event, cp. (36-a-b):

- (36)
- a. ??They baked occasional cookies.
 - b. They baked occasional batches of cookies.

- Additional concerns about the determiner restrictions on generic and adverbial readings:
 - Plural *some* and *a few* sometimes seem acceptable with both readings; see (37); in addition, non-deictic demonstratives seem ok with the generic but not the adverbial reading; see (38).

- (37)
- a. A few/some occasional beers are good for you.
= It's good for you to have a few/some beers on occasion.
 - b. She does still leave a few occasional "fool's raisins" just outside of her box.
(<http://www.barnhartgallery.com/houserabbits.htm>)
= Occasionally she leaves a few "fool's raisins" just outside of her box.

- (38)
- a. That occasional beer is good for you.
 - b. ??We saw that occasional car on the road.
- On the generic reading, the definite article with *frequent* yields only an anaphoric reading, not the "indefinite" reading associated with the adverbial reading, see (39-a).
 - On the adverbial reading, the definite article never appears with *frequent*, (39-b).

- (39)
- a. The frequent cups of coffee are good for you.
 - b. John wrote the frequent letters to his mother.
≠ Frequently, John wrote the letters to his mother.
- *odd* and *rare* prefer the definite article; see (40) (*NB*: blocking of the relevant reading with the indefinite article seems unlikely as it does not happen with the definite article).

- (40)
- a. ??A(n)/The odd/rare visitor is nice to have.
 - b. We saw ??a(n)/the odd/rare car.

⇒ The range of determiners is limited, but slightly broader than generally claimed.

⇒ *Question*: Is there something special about *the occasional/infrequent/rare/odd N*?

6 Conclusion

- We have provided a more detailed picture of the FA facts; a lot of empirical work still has to be done.
- Our use of event types is a small innovation which allows us to avoid complications in other parts of the grammar.

References

- Asher, Nicholas. 2007. *A Web of Words: Lexical Semantics in Context*. Ms., U Texas Austin/CNRS.
- Barwise, Jon, and John Perry. 1983. *Situations and Attitudes*. Cambridge, MA: MIT Press.
- Bolinger, Dwight. 1967. Adjectives in English: Attribution and predication. *Lingua* 18:1–34.
- Carlson, Greg. 1977. *Reference to Kinds in English*. Doctoral Dissertation, U. Mass. Amherst.
- Davidson, Donald. 1967. The logical form of action sentences. In *The Logic of Decision and Action*, ed. Nicholas Rescher, 81–95. Pittsburgh: University of Pittsburgh Press.
- Dayal, Veneeta. 2004. Number marking and (in)definiteness in kind terms. *L & P* 27:393–450.
- Déprez, Viviane. 2005. Morphological number, semantic number and bare nouns. *Lingua* 115:957–883.
- Ginzburg, Jonathan. 2005. Situation Semantics: The ontological balance sheet. *Research on Language and Computation* 3.4:363–389.
- Heim, Irene. 1982. *The Semantics of Definite and Indefinite Noun Phrases*. Doctoral Dissertation, University of Massachusetts at Amherst.
- Kamp, Hans. 1981. A theory of truth and semantic representation. In *Formal methods in the study of language*, ed. J. A. G. Groenendijk et al., volume 1, 277–322. Amsterdam: Mathematisch Centrum.
- Landman, Meredith, and Marcin Morzycki. 2003. Event-kinds and manner modification. In *Proceedings of the Western Conference in Linguistics (WECOL) 2002*, ed. Nancy Mae Antrim, Grant Goodall, Martha Schulte-Nafeh, and Vida Samiian. California State University, Fresno.
- Larson, Richard. 1998. Events and modification in nominals. In *Proceedings from SALT VIII*, ed. Devon Strolovitch and Aaron Lawson, 145–168. Ithaca, NY: CLC Publication.
- McNally, Louise, and Gemma Boleda Torrent. 2004. Relational adjectives as properties of kinds. In *Empirical Issues in Syntax and Semantics*, ed. Olivier Bonami and Patricia Cabredo Hofherr, volume 5, 179–196. <http://www.cssp.cnrs.fr/eiss5>.
- Moltmann, Friederike. 1997. *Parts and Wholes in Semantics*. Oxford: Oxford University Press.
- Müller-Reichau, Olav. 2006. *Sorting the World: On the Relevance of the Kind-Level/Object-Level Distinction to Referential Semantics*. Doctoral Dissertation, Universität Leipzig.
- Parsons, Terence. 1990. *Events in the Semantics of English: A Study in Subatomic Semantics*. Current Studies in Linguistics Series 19. Cambridge, MA: MIT Press.
- Reichenbach, Hans. 1947. *Elements of Symbolic Logic*. London: MacMillan.
- Schäfer, Roland. 2007. On frequency adjectives. In *Proceedings of Sinn und Bedeutung 11*, ed. Estela Puig Waldmüller, 555–567. Barcelona: Universitat Pompeu Fabra.
- Stump, Gregory T. 1981. The interpretation of frequency adjectives. *L & P* 4:221–257.
- Zimmermann, Malte. 2003. Pluractionality and complex quantifier formation. *NLS* 11:249–287.