"Always" and "Only":

Why not all Focus Sensitive Operators are Alike.

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Abstract. We discuss focus sensitivity in English, the phenomenon whereby interpretation of some expressions is affected by placement of intonational focus. We concentrate in particular on the interpretation of "always" and "only", both of which are interpreted as universal quantifiers, and both of which are focus sensitive. Using both naturally occurring and constructed data we explore the interaction of these operators with negative polarity items, with presupposition, with prosodically reduced elements and with syntactic extraction. On the basis of this data we show that while "only" lexically encodes a dependency on the placement of focus, "always" does not. Rather the focus sensitivity of "always" results from its dependency on context, and from the fact that focus also reflects what is given in the context. We account for this split using an analysis couched in event semantics.

1. Introduction

1.1. FOCUS SENSITIVITY OF "ALWAYS" AND "ONLY"

An expression is *focus sensitive* if its interpretation is dependent on the placement of focus. In English, focus is typically marked by a pitch rise on a stressed syllable. Can a single mechanism explain all cases of focus sensitivity? Some, e.g., Rooth (1992), have explicitly stated that their goal is to find a single all encompassing theory of focus sensitivity, and of focus more generally. In this paper, we will present data showing that focus sensitivity is not a uniform phenomenon. Focus sensitivity of some operators is derived by a grammatical mechanism. We call these operators *focus functional*. Focus sensitivity of other operators results from a pragmatic mechanism. At least some non-focus functional operators manifest focus sensitivity entirely as a side effect being anaphoric.

There is a wide range of constructions in English that are known to exhibit some form of focus sensitivity. These include questions, counterfactual conditionals, discourse connectives, adverbs of quantification, quantificational determiners, frequency adverbs, generics, emotive factives and attitude verbs, negation, superlatives, modals, and a heteroge-

neous set of other operators ("only", "even", "also", "again").[1] To our knowledge, no case has ever been made for dividing these focus sensitive expressions into two separate classes. We will provide varied evidence for such a bifurcation, although leaving for further work a thorough survey of which expressions belong in which class. We concentrate on an in depth analysis of two constructions rather than a broad survey of the entire class.

We will examine the interpretation of "always" and "only". It should be noted that "always" and "only" appear to have similar meanings. They are both standardly analyzed as universals, and they are both standardly taken to be focus sensitive. What we will show is that sentences involving "always" and "only" gain their interpretation in (dramatically) different ways.

The focus sensitivity of "always" and "only", and their universal character, is illustrated by the following example paradigms. In each group, the (a) and (b) examples have similar interpretations available. These interpretations are approximated by (c) and (d). In (c), "always" and "only" quantify over individuals.[2] In (d), "always" and "only" quantify over events.[3] In Section 5, we return to an events analysis along the lines of the formulae in (1d) and (2d).

(1) **Focus sensitivity of "always" and "only": direct object focus.**

a. Sandy always feeds [Fido]$_F$ Nutrapup.

b. Sandy only feeds [Fido]$_F$ Nutrapup.

c. $\forall x\ feed(sandy, x, nutrapup) \rightarrow x = fido$
    "Everything Sandy feeds Nutrapup to is Fido"

d. $\forall e\ (feeding(e)\ \wedge\ \text{AGENT}(e) = sandy\ \wedge$
    $\text{THEME}(e) = nutrapup) \rightarrow \text{GOAL}(e) = fido$

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[1] See Rooth (1996a) and Hajiĉová et al. (1998) for examples of most of these constructions.

[2] The analyses in (c) are similar to a structured meaning semantics interpretation of the (a) and (b) examples; see Krifka (1992) and von Stechow (1989). Note that sentences with "only" like (1b) are often argued to include as part of their basic meaning the proposition that the sentence minus "only" is true, i.e. Sandy feeds Fido Nutrapup. Various authors have claimed that this proposition is not an entailment. Horn (1996) has claimed that this an inference arises from a combination of the universal meaning as given in (1c) and the standard universal presupposition that the domain of quantification is non-empty, here that Sandy fed something Nutrapup. In this case, the inference from (1b) to Sandy having fed Fido Nutrapup has a similar status to the implication from "Everyone likes Sandy" to "Someone likes Sandy". We will assume a position like Horn's on this issue without providing further evidence.

[3] Event semantic analyses of focus sensitivity have been proposed in Bonomi and Casalegno (1993) and Herburger (2000).

(2)   **Focus sensitivity of "always" and "only": indirect object focus.**

    a.   Sandy always feeds Fido [Nutrapup]$_F$.

    b.   Sandy only feeds Fido [Nutrapup]$_F$.

    c. $\forall x\ feed(sandy, fido, x) \rightarrow x = nutrapup$
        "Everything Sandy feeds to Fido is Nutrapup"

    d. $\forall e\ (feeding(e)\ \wedge\ \text{AGENT}(e) = sandy\ \wedge$
        $\text{GOAL}(e) = fido) \rightarrow \text{THEME}(e) = nutrapup$

Examples like those above show why semanticists have tended to assume that "always" and "only" can be analyzed similarly. Typically, researchers refer to a single mechanism, so called *association with focus*, to explain the meaning difference between (1a) and (2a), and to explain the difference between (1b) and (2b).

1.2. THEORIES OF FOCUS INTERPRETATION

While all theories agree that focus sensitive operators like "always" and "only" interact with focus in linguistic contexts like that exemplified by (1) and (2), there is controversy about how *grammaticized* the relationship between "always", "only" and their associated focus is (Partee 1999:215ff): do the lexical entries of "always" and "only" stipulate association with a focused constituent in their syntactic scope or is the interaction illustrated by (1) and (2) not an absolute lexical requirement of the constructions, and perhaps optional in certain contexts? This question provides the main distinction between different contemporary theories of focus. Theories based on lexical stipulations we will term *semantic*, and those that explain focus sensitivity without recourse to such stipulation we will term *pragmatic*.

A semantic theory of focus interpretation introduces semantic objects, focus semantic values, which are then manipulated by construction-specific rules (Rooth 1992:107). Both structured meaning semantics (Jacobs, 1983; Krifka, 1992; von Stechow, 1989) and alternative semantics (Rooth, 1985) are semantic theories of focus interpretation.[4]

In a pragmatic theory of focus interpretation there is no construction-specific reference to focus. According to a pragmatic theory of focus interpretation, pragmatic factors optionally link the interpretation of

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[4] For our purposes, movement theories of focus such as Chomsky (1972) fall into the *semantic* class, although our chosen terinomlogy is not apt. What is important here is that on these accounts intonational focus has a grammatical correlate which is manipulated by grammar internal rules, and that the syntactic contingencies govern the availability of readings.

"always" and "only" to their associated focus. Rooth (1992) and von Fintel (1994) explore similar pragmatic theories of focus interpretation. Other pragmatic approaches to focus sensitivity can be found in Geurts and van der Sandt (1997a), Roberts (1995), Roberts (1996) and Schwarzschild (1997).

Rooth (1992, 1996b) suggests a middle ground in which there is some stipulation of focus effects for particular lexical items, what Rooth calls an intermediate theory of focus interpretation. Rooth argues that there is some evidence that focus effects on interpretation need to be stipulated. In what follows, we show that "only" encodes a lexicalized dependency on focus marking, but the meaning of "always" does not. Rather, the focus sensitivity of "always" must be accounted for pragmatically. In our sense, both semantic and intermediate theories define focus functional operators. Thus what we claim is that what is needed for "only" is a semantic or intermediate theory, while what is needed for "always" is a pragmatic theory. Overall, this takes us to a hybrid semantic/pragmatic theory of focus, but it is quite distinct from Rooth's intermediate position, since he did not even address the possibility that focus sensitivity of different operators is explained by different mechanisms.

1.3. A FIRST PUZZLE: EXHAUSTIVITY

In this paper we discuss many phenomena involving stark differences between the interpretation of "always" and "only". To illustrate the type of argument we will use, consider (3) and (4).

(3)   Sandy always feeds [Fido]$_F$ Nutrapup, and she always feeds [Butch]$_F$ Nutrapup too.

(4)   * Sandy only feeds [Fido]$_F$ Nutrapup, and she only feeds [Butch]$_F$ Nutrapup too.

The infelicity of the second example illustrates the fact that "only" has an *exhaustive* interpretation, whereby the focused item must denote the unique (or maximal) entity having the property ascribed to it by the remainder of the sentence. Here "Fido" must be the unique entity of which it is true that Sandy feeds it Nutrapup, and the reader is stymied when asked to accept that there are two unique bearers of the same property. On the other hand, (3) shows that "always" allows for non-exhaustive interpretations.[5]

The meaning of the first conjunct of (4) seems to be captured by the formula in (1c): it is easily seen that this formula entails that no

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[5] Hajiĉová et al. (1998:31-32) make a similar observation.

animal other than Fido was fed Nutrapup by Sandy. However, the fact
that (3) is consistent shows that the first conjunct of (3) does not have
the meaning in (1c). For the moment we will leave the correct analysis
of (3) as a puzzle. We merely observe that the contrast between (3) and
(4) presents a problem for any analysis which attempts to account for
the focus sensitivity of "always" and "only" via a single mechanism,
and which treats both operators as universal quantifiers.

1.4. OVERVIEW OF THE PAPER

The remainder of this paper consists of 4 sections, three empirical and
one theoretical. Sections 2 to 4 discuss negative polarity item licensing,
"association with presupposition" effects, and association with leaners
and gaps. In Section 5, we present a theory of focus sensitivity in terms
of event semantics, accounting for the above exhaustivity puzzle and
for the data introduced in Sections 2 to 4.

2. Monotonicity Effects

2.1. QUANTIFIERS AND MONOTONICITY

Let us accept that "always" and "only" express quantifier relations
with universal force, so that, like "every", they have a restrictor and a
scope. For example, recall the gloss in (1), "Everything Sandy feeds to
Fido is Nutrapup": here the restrictor is "-thing Sandy feeds to Fido",
and the scope is "is Nutrapup". In this section, we will show how data
involving polarity items bears on the question of which material in
a sentence with "always" or "only" ends up being interpreted in the
restrictor.[6]

Herburger (2000) treats both "only" and "always" as event quanti-
fiers. She makes the following generalization (p. 18):

> All the nonfocused material in the scope of the event quantifier Q
> also restricts Q.

In this section, we wish to argue against the hypothesis that unaccented
material in the scope of "always" restricts its domain of quantification.

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[6] In the case of "only", there is no standard terminology for identifying which
argument of "only" is the restrictor, and which the scope. To understand why there is
room for confusion, consider uses of "only" as a nominal modifier, having comparable
but distinct syntax to a quantificational determiner. For example in the case of "Only
cats chase mice", the nominal argument "cats" appears syntactically to be analogous
to the restrictor of the quantificational determiner "every", but semantically like
the scope of "every". See de Mey (1991) for a related discussion. We will label the
arguments of "only" on semantic grounds.

However, we will show that this analysis works well for "only". The argument is based on data involving the licensing of polarity items.

The notion of *downward monotonicity* will be important. It can be understood in terms of inference patterns that involve substituting property denoting terms by alternates which have larger or smaller extensions. Suppose a sentence S has a single occurrence of a property denoting term P. Let P denote a subset of another property P_{big}. Write S_{big} for the variant of S with P replaced by P_{big}. If $S \models S_{big}$, then P occurs in an upward monotone context in S. If $S_{big} \models S$, then P occurs in an downward monotone context in S.

"Every" has one downward monotone argument and one upward monotone argument. For example, recall the gloss in (1), "Everything Sandy feeds to Fido is Nutrapup": here the restrictor "-thing Sandy feeds to Fido" is in a downward monotone context, and the scope "is Nutrapup" is in an upward monotone context. As a result of these properties of "every", Negative Polarity Items (NPIs) are licensed in the restrictor but not the scope. The following examples show licensing of the NPI "ever":[7]

(5) a. Every bear that ever there was is going to be down in the woods because....[8]

  b. * Every bear is ever going to be down in the woods.

2.2. Polarity item data

Suppose that unaccented material in the argument of VP modifying "only" and VP modifying "always" is interpreted in the restrictor of a universal. We might then make the following predictions:

H_{only} NPIs should be licensed in non-focal VP positions in the scope of "only".

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[7] NPIs have been divided into two main sub-classes (Zwarts, 1995; Jackson, 1995; Krifka, 1995), *weak* and *strong*. Weak NPIs in English include unstressed "any" and "ever", "care to" and "bother with". Strong NPIs include "lift a finger" and "give a damn/fuck/shit". The NPIs in these classes are differentiated by their distribution: weak NPIs are licensed in all downward monotone contexts, and (according to Zwarts 1995) strong NPIs are licensed in a subset of these contexts having the property of *anti-additivity*. The restrictor of a universal is downward monotone and anti-additive. Strong and weak NPIs pattern together in all the observations we make below. See Horn (1996) for a claim that "only" licenses weak but not strong NPIs. This claim is counter-evidenced below, but see Beaver and Clark (2001) for full discussion.

[8] James B. Kennedy, *The Teddy Bear's Picnic*, 1913. (Tune composed John W. Bratton, 1907).

H$_{\textbf{always}}$ NPIs should be licensed in non-focal VP positions in the scope of "always".

Naturally occurring data we have found confirm H$_{only}$. Examples (6) – (15) all illustrate NPI distribution in the scope of VP "only". In each case, the relevant occurrence of "only" has been underlined, and the NPI has been boxed. The first four examples illustrate weak NPIs, and the remainder strong NPIs. In all of these cases, the NPI is not the focus of "only".[9]

(6)   We only ever had cream of mushroom.[10]

(7)   The central problem is that it is only ever possible to sample a child's language over a fixed period of time and within a finite number of situations.[11]

(8)   Because we found one order of this group to be much more likely than any other, we probably only care to see the map distances for this single order.[12]

(9)   According to his viewpoint, the Miatas are prone to this partly because they don't accumulate miles the way most cars do. The timing belt should be changed at 60,000 miles OR 60 months, and most people only bother with the mileage.[13]

(10)   The only words coming out of my mouth is a lyrical
              thang

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[9] Note that certain NPIs which mark the lowest points on scales are licensed in the focus of "only", although the analogy with universals suggests that this is an upward monotone position. In such cases "only" has a scalar reading rather than an exhaustive reading. We posit that whenever a phrasal NPI is licensed in the focus of "only", it has a referential interpretation, derived compositionally, putting it on the endpoint of a scale, rather than a purely conventional non-compositional interpretation. For example, "Did Mary have any whiskey?" can be followed by "She only drank [a drop]$_F$!". This reply would only be a true statement if there is some drop of whiskey that Mary drank. We claim that an NPI lacking a referential interpretation is never licensed in the focus of "only". Thus "She only drank [anything]$_F$" and "She only drank [diddly squat]$_F$" are both impossible.

[10] *The first fifty*, Muriel Gray. Mainstream Publishing, Edinburgh, 1990.

[11] *Early language development*, John Harris. Routledge and Kegan Paul, London, 1990.

[12] *Constructing Genetic Linkage Maps with MAPMAKER/EXP Version 3.0: A Tutorial and Reference Manual*, Stephen Lincoln, Mark Daly and Eric Lander, Whitehead Institute for Biomedical Research Technical Report, January, 1993

[13] `http://www.socalm.org/crank/crank199609.pt1.html` — email in WWW archive.

> So please back tha fuck up off my screen tho
> Since i was four you was known to be the enemy
> Like rintintin you only give a shit for me
> The community took four steps higher
> 86ing motherfuckas working for the suppliers[14]

(11)   . . . if the left flipper is too weak for a bearkick, as it of ten is because people who run arcades are usually assholes and only give a shit about their street fighter shit games, use that left flipper to send the ball back into the swamp.[15]

(12)   Well, I certainly don't give a damn. I only gave a damn because I thought you did.[16]

(13)   If you were a kid in Cleveland (then), you only gave a damn about two things – the Beatles and Ghoulardi.[17]

(14)   Work is the curse of Stevie Thomas Jackson and Christopher Thomas Geddes. Stuart David, visionary and poet, cursed it before trying it, and would only lift a finger to pick his nose or write a book.[18]

(15)   You may think faeries are sweet, good and kind, but they're not. They're vicious, greedy buggers who'd only lift a finger to save their best friend if they thought they'd profit from it. They have sharp teeth too and, as many people have found out, won't hesitate to use them.[19]

In contrast, corpus searches have not borne out H_{always}. Neither corpus searches in the British National Corpus, nor corpus searches in ten years of the New York Times, nor web searches produced any credible examples of the six NPIs from (6) – (15) in positions licensed

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[14]   "Interrogation", The Coup, on *Genocide and Juice* (CD).

[15]   `http://www.acc.umu.se/ oscar/pinball/gbook/guestbook.html` — A page for pinball lovers.

[16]   Jamie Malankowski, *Five Finales: How to wrap up Seinfeld? We offer some suggestions*, Time Magazine vol. 151 no. 17, May 4 1998. Note: we take it that in this example the focus of "only" is the "because" clause although "gave" would also be read with contrastive stress to mark the past tense morpheme.

[17]   Mike Olszewski, quoted in the *Akron Beacon Journal*, October 9, 1998.

[18]   *If You're Feeling Sinister* (Sleeve Notes), Belle and Sebastien, 1996.

[19]   Online text at `http://www.angelfire.com/me/Spero/folks.html`.

by an occurrence of "always" (or "usually") in the same clause. Furthermore, replacement of "only" by "always" in sentences involving NPIs produces infelicity, even after appropriate adjustments have been made. Witness the effects of replacing "only" by "always" in variants of (6) – (15):

(16)   People only/*always ever have [cream of mushroom soup]$_F$

(17)   It is only/*always ever possible to sample a child's language over [a fixed period of time]$_F$

(18)   We probably only/?always care to see the map distances for [this single order]$_F$

(19)   People only/?always bother with [the mileage]$_F$

(20)   People only/?always give a shit for [me]$_F$

(21)   People only/?always give a shit about [street fighter games]$_F$

(22)   I only/?always gave a damn because I thought [you did.]$_F$

(23)   If you were a kid in Cleveland, you only/*always gave a damn about [two things]$_F$.

(24)   Stuart would only/?always lift a finger to [pick his nose]$_F$ or [write a book]$_F$.

(25)   Faeries would only/?always lift a finger to [save their best friend]$_F$.

This data points towards the converse of H$_{always}$. Given that NPIs are certainly not licensed in the focus of "always", we could then generalize to the claim that "always" does not license NPIs at all.[20]

There appears to be one significant exception to this rule. Our corpus and web searches yielded examples of "any" and its variants ("anything", etc.) in VPs modified by "always". As discussed at greater

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[20] NPIs are licensed in subordinate "if" and "when" clauses prior to main clauses containing "always". However, NPIs are ALSO licensed in these positions prior to main clauses containing "sometimes", which semantically is not normally thought of as having a downward monotone restrictor, and indeed in "if" and "when" clauses in general. It is thus not clear whether the licensor is the quantificational adverb, or some other aspect of the subordinate clause structure.

length in Beaver and Clark (2001), no explanation in terms of NPI licensing seems to fit the facts, and we conclude that *free-choice* readings of "any" are responsible. If so, distribution of "any" (and associated compounds) does not counterevidence our claim that H_{always} is false.[21]

2.3. Discussion: Monotonicity data and focus sensitivity

The monotonicity data we have examined in this section supports the hypothesis that non-focal material in the syntactic domain of "only" is interpreted in the restrictor of a universal.[22] Concerning "always", the data discussed so far is puzzling. Standard examples of focus sensitivity show that there is a correlation between unfocussed material and the adverb's semantic restrictor. Yet the evidence we have presented in this section shows that in simple sentences involving "always", unfocussed material is not interpreted in the restrictor of a universal.

So we are in a quandary: we have a model of how "only" is interpreted, but the model does not apply to "always". In the following section, we will present data which differentiates once more between "always" and "only", and which also provides clearer evidence as to just how "always" gets its interpretation.

3. Contextual Association

3.1. Association with presupposition

The last section provided evidence that whereas all non-focal material in the scope of "only" is interpreted in the restrictor of a universal, this is not the case for "always". In this section, we show a converse effect: whereas stressed material in the scope of "only" becomes the semantic focus of the operator, sometimes "always" does not associate with stressed material in its scope. Rather, the restrictor of "always" is determined contextually, often producing an effect that has been described (e.g., by Rooth 1999) as *association with presupposition.*

As will be discussed, a number of previous authors have concluded that "always" may associate with presupposition. However, we use minimal pairs to show for the first time that in this respect the inter-

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[21] Note that Kadmon and Landman (1993) and Krifka (1995) attempt to explain distribution of "any" without recourse to ambiguity between NPI and free-choice readings. Yet it remains the case that "any" occurs where there is no overt operator producing a downward monotone context.

[22] Horn (1996) and Herburger (2000) discuss similar data showing that NPIs are licensed in non-focal VP positions in the scope of "only" (contra Atlas 1993).

pretation of sentences involving "always" contrasts with that of those involving "only".

Perhaps the best known evidence that focus sensitive constructions can associate with presupposition is due to Schubert and Pelletier (1987, 1989). They offer examples like (26), in which the restrictor of an adverb of quantification is filled in not by material explicitly present in the sentence, but by material apparently related to the presuppositions of what is in the adverb's scope (here, the presupposition that there is an appropriate professor available for admiration):

(26)   A student always admires a fair professor.
        'When a situation occurs allowing a student to perceive that a professor is fair, the student always admires the professor.'

Rooth (1999) and Cohen (1999), discussing similar data,[23] suggest that presupposition might play a central role in the analysis of focus. Rooth explicitly proposes a strong hypothesis: that all focus sensitivity might be mediated by a mechanism of association with presupposition. In this view, taken up in different form by Geurts and van der Sandt (1997a), there is no mechanism of association with focus. Rather, focus produces presuppositions, and certain operators are sensitive to these presuppositions. In what follows, we will argue that the data does not support such a move.

3.2. Contextual Association Data

We will base the argument on a class of data discussed by Cohen (1999). He considers cases where there is both a clear focus, and a separately induced presupposition, and where it appears to be the presupposition rather than the focus that ends up restricting a quantificational adverb. Cohen does not consider focus sensitive operators other than quantificational adverbs.

Example (27) involves both a presupposition and a focus in the argument to the quantificational adverb "always". Theoretically, we might conceive of two readings, as shown in (a) and (b). In the (a) reading, the restrictor clause contains the material presupposed by the *implicative* verb "managed", and in the (b) reading the restrictor contains all non-focal material. What Cohen observed is that, contrary to the predictions of an association with focus account, the (a) reading is the preferred one.

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[23] Rooth additionally discusses cases where the interpretation of counterfactual conditionals is affected by presupposition, but we do not consider counterfactual conditionals in the current paper.

(27)   Mary always managed to complete her [exams]$_F$.

    a.   'Whenever Mary took exams, she completed them.'

    b. ? 'Whenever Mary completed something, it was invariably an exam.'

Now consider (28), in which "only" is substituted for "always". Here the (a) reading, involving association with presupposition, is impossible, while the association with focus reading, as in (b), is unproblematically available.

(28)   Mary only managed to complete her [exams]$_F$.

    a. * "What Mary did when taking exams was complete them and do nothing else."

    b.   "What Mary completed was an exam and nothing else."

This contrast can be brought out more clearly if we consider possible continuations to (27) and (28). If (27) had only the association with focus reading, then (29) would be contradictory, since it would imply both that whenever Mary completed something it was an exam and whenever she completed something it was an assignment. However, on the association with presupposition reading, (29) would be consistent, meaning that whenever Mary took an exam she completed it, and whenever she did an assignment she completed it. Since (29) is consistent, something like the association with presupposition reading is available.

(29)   Mary always managed to complete her [exams]$_F$, and she always managed to complete her [assignments]$_F$.

In contrast, (30) is clearly inconsistent showing that the association with focus reading is the only one available.

(30)   * Mary only managed to complete her [exams]$_F$, and she only managed to complete her [assignments]$_F$.

(29) and (30) are comparable to the exhaustivity examples (3) and (4). In Section 5, we show that the same mechanism which explains the association with presupposition effect illustrated in sentences like (29) explains the contrast between (3) and (4).

Another phenomenon that can be explained in terms of the (un)availability of association-with-presupposition readings is the fact that focused "someone" can occur in the argument to "always", but not "only":

(31)   Mary always took [someone]$_F$ to the cinema

(32)   ? Mary only took [someone]$_F$ to the cinema

The infelicity of (32) is unsurprising if it has the association with focus reading "The single person that Mary took to the cinema was someone", which is uninformative. In contrast, the felicity of (31) is unsurprising if it has the reading "When Mary went to the cinema, she always took someone." This reading is one that could loosely be described as association with presupposition, in that a plausible pragmatic presupposition of someone discussing who Mary took to the cinema is that Mary went to the cinema. But let us note in passing that "Mary took someone to the cinema" may not lexically presuppose that Mary went to the cinema.[24]

The remaining examples in this section show that the apparent ability of "always", but not "only", to associate with presuppositions is common to a wide range of presupposition types in English.

Example (33) and (34) demonstrate the effect for a factive use of the verb "remember". (33), with the focus sensitive operator "always", has an association with presupposition reading, as in (a), but (34), with the focus sensitive operator "only", has an association with focus reading, as in (b):

(33)   Mary always remembers to go to [church]$_F$.

      a.   "Whenever it's time for church, Mary remembers to go."

      b. ? "Whenever Mary remembers to do something, it's always to go to church."

(34)   Mary only remembers to go to [church]$_F$.

      a. * "The only thing Mary does when it's time for church, is remember to go."

      b.   "The only place Mary remembers to go is to church."

The next two examples demonstrate the same effect for the lexical presupposition of "beats":

(35)   Kim always beats Sandy at [ping-pong]$_F$.

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[24] Consider "Most weekends Mary takes someone to the cinema, but last weekend she did not take anyone to the cinema." It does not follow from the final negated clause that Mary went to the cinema last weekend, so we see that at least in some cases the putative presupposition does not project from negation, and so perhaps is not a lexical presupposition at all.

   a.   "When Kim plays ping-pong with Sandy, Kim invariably beats Sandy."

   b.   ? "When Kim beats Sandy at something, it is invariably ping-pong."

(36)   Kim only beats Sandy at [ping-pong]$_F$.

   a.   * "What Kim does when playing a game of ping-pong with Sandy is beat her and do nothing else."

   b.   "Kim beats Sandy at ping-pong and nothing else."

We now turn to naturally occurring examples. To be sure that the reading we get for a sentence corresponds to association with presupposition rather than association with focus, we have to know what the focus is. When looking at naturally occurring textual examples, the focus is not explicitly marked, so that it can be difficult to say of a given textual example that it counter-exemplifies the association of "always" with focus. However, looking at naturally occurring textual examples involving "always" is still instructive. We have found that the difference in interpretation that would be obtained if "only" were substituted for "always", is often stark, even if an effort is made to make sure that the two variants are read with identical intonation. In many cases, it seems clear that the difference is best explained by saying that the "always" is being restricted in a way that is impossible for "only".

In (37a), the presupposition of "answer your prayers" is presumably earlier prayer. Thus "God didn't always answer your prayers" means that there are exceptions to the rule that every situation in which the addressee prayed is one which received a response. Furthermore, we get this reading whether stress is placed on "answer", "prayers" or both. In (37b), "always" has been replaced by "only". Here, stress affects the interpretation considerably. With stress on "answer", the implication is that some of the addressee's prayers received something other than an answer. With stress on "prayers" the implication is that not only your prayers, but perhaps also some of your telephone calls, faxes, post-it notes and emails received heavenly responses. Finally, with stress on both "answer" and "prayers", the implication is that higher powers had been responsible for actions that the addressee had not actually requested.

(37)   a.   More important, you could get medicine guaranteed to cure you, whereas God didn't always answer your prayers.[25]

[25] K. Carmichael, *Ceremony of innocence.*, Macmillan Publishers Ltd., Basingstoke, 1991

b.   God didn't only answer your prayers.

In example (38a), concerning the sport of rugby, various readings are available. It is possible to understand the subject "a prop forward" as the semantic focus of "always". What is notable is that this reading is obtained even if the example is read with stress on "brunt" and "punishment", but not on "prop forward". Here what is presupposed is a set of high-speed collisions, from which punishment will necessarily follow, and from which some group of players will bear the brunt. Against this background, we learn the identity of the unfortunate recipients of the punishment, namely the prop forwards. A reading of this sort is not available in (38b), although this is unsurprising given that the focus of VP "only" is restricted to the VP. Rather, the reading that we obtain is that a prop forward does not take the brunt of anything apart from the punishment. This is presumably true, but we are not sure what it means.

(38)   a.   It's a high-speed collision sport and a prop forward always takes the brunt of the punishment.[26]

b.   A prop forward only takes the brunt of the punishment.

(39a) involves the implicative "manage" in the scope of "always". The final clause can be read with main stress on "rehomed". Salient in the context is a set of occasions when dogs are at a pound, and against the background of this pragmatically presupposed set of occasions, it is claimed that every member of the set is also an occasion where a dog gets rehomed. Note that the lexical presupposition of "manage", that the rehoming is difficult or that the subject makes considerable effort to achieve the rehoming, does not directly restrict the quantification. We claim that the sentence makes a claim about all instances of dogs requiring rehoming, not just the difficult cases. The variant with "only" once again produces an entirely different reading. Given the same sentence final stress, (39b) means that the only thing that the representatives of the pound manage to do to the dogs is rehome them, and not, for instance, treat them to a new hairstyle at the local grooming parlor.

(39)   a.   Technically, if they're not claimed within seven days, then they should be put to sleep, but we always manage to get them rehomed.[27]

b.   We only manage to get them rehomed.

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[26]   *The Daily Mirror*, Mirror Group Newspapers, London 1992
[27]   Dogs Today. Burlington Publishing Company Ltd, Windsor, 1992.

3.3. Discussion: What does "always" associate with?

The data we have presented seems to show that presuppositions can over-ride the placement of focus in the interpretation of sentences containing "always", but that this is not the case for "only". Context certainly helps determine the interpretation of sentences containing "only", as Rooth (1992) in particular has argued. But regarding "only", context can never over-ride the effects of accentual focus.

While we will continue to hold that "only" associates with focus, it will now be shown that it would be wrong to conclude that "always" associates with presupposition. Using an argument similar to that developed in Beaver (1994,1995,2001), we will now show that if *presupposition* means the set of conventional presuppositions triggered by linguistic items (definites, factives etc.) in the sentence, then "always" does not directly associate with presupposition.[28] Consider (40):

(40)   Every Friday Sandy goes to town. She always realizes that the Harley Davidson she's riding there is going to attract a lot of attention.

The first sentence makes a set of events salient, events which take place on Friday and involve Sandy going to town. The second sentence involves a definite description "the Harley Davidson she is riding" which conventionally triggers the presupposition that there is such an object, and a factive verb "realizes", here conventionally triggering the presupposition that the bike will attract attention.

Suppose that "always" associated with conventionally triggered pre-suppositions, and this was the principle mechanism by which the domain restriction of "always" was set. Then we should expect the second sentence in (40) to mean "Whenever Sandy is riding a Harley Davidson and it attracts a lot of attention, Sandy realizes that it is attracting attention." But (40) does not mean this.

One might consider a weaker position: the domain restriction of "always" is constrained by a combination of what is salient in the context, and what is presupposed in the sentence. But then the predicted meaning of (40) would be paraphrasable as "Whenever Sandy

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[28] The original argument developed by Beaver was used to counter-evidence the process of *intermediate accommodation* of presuppositions. This mechanism is more general than presuppositional restriction of "always", including any accommodation of presuppositions into a context other than the global context of discourse or the local context of the presuppositon trigger. For instance, intermediate accommodation could take place in the antecedent of a conditional, or the restrictor of a quantificational determiner.

rides her Harley to town on Friday and it attracts a lot of attention, Sandy realizes that it is attracting attention." This is also incorrect, as can be see from the fact that (41) is difficult to process, and seems contradictory. If the presuppositions were providing a restriction which merely added to that given by context, the interpretation of (41) would be the same as that of (42). But (42) is perfectly coherent.

(41)   ? Every Friday Sandy goes to town. She always realizes that the Harley Davidson she's riding there is going to attract a lot of attention. So mostly she goes by bus.

(42)   Every Friday Sandy goes to town. When she rides her Harley Davidson there, she always realizes that it's going to attract a lot of attention. So mostly she goes by bus.

To summarize, "always" does not associate with the conventional presuppositions of its VP argument. So what is the relationship between the domain restrictions of "always" and conventional presuppositions? Returning to (40), what a hearer will commonly conclude is that every Friday Sandy rides her Harley to town, every Friday it attracts attention, and every Friday she realizes that it is attracting attention.

We must draw a fine distinction. A model in which "always" associates with presupposition would not be the same as one in which "always" associates with something else but all the while respecting presuppositions. It is the latter sort of model we advocate, echoing conclusions of Beaver (1994), von Fintel (1994), and Geurts and van der Sandt (1997b). In the example at hand, the presupposition that Sandy is riding a conspicuous Harley does not help the hearer choose which set of events is the domain restrictor of "always", but it does tell the hearer that amongst the set of events chosen, there are none where Sandy fails to ride a conspicuous Harley.

We can summarize our conclusions about how the domain restriction of "always" is established as follows. First, if "always" associates with anything, it is with contextually salient sets of events or situations. Second, the presuppositions of the VP argument are not what determines which set of events or situations "always" associates with. Third, whatever set of situations or events "always" associates with, it must be one which satisfies the presuppositions triggered in the scope of "always".

If "always" associates with a contextually salient set of events or situations, then what explains the appearance of association with presupposition? The most important reason is simply that it is often hard to tell the difference between an anaphoric link to a set of events that

satisfies the presuppositions, and a direct dependency on the presupposition. But there is more at work. When a suitable antecedent set of events is available for "always", anaphoric resolution takes place. But sometimes there is no fully explicit antecedent.

For example, in the relevant clause of (38), "a prop forward always takes the brunt of the punishment", there is no linguistically explicit antecedent set of events. The set of all rugby games is salient, but there is nothing in the previous text which a linguist might tag with an index to be coindexed with the implicit argument of "always".

Where the linguistic context does not provide a suitable antecedent explicitly, hearers accommodate one. When accommodating, thinking is presumably colored not only by what was salient in the context, but also by what would be needed in order for the utterance containing "always" to make sense. Thus, in cases where the antecedent is not explicit, conventionally triggered presuppositions should be expected to constrain the process of accommodation. None the less, we maintain that this is a pragmatic and inferential process, not a grammaticized linking of presuppositions in the scope of "always" to the content of the restrictor.

Regarding "always", the conclusions we have reached are very much in tune with previous work of Beaver (1994) and von Fintel (1994). As stressed by the first of these, the mistake of concluding that presuppositions directly constrain restrictors is particularly tempting when confronted with decontextualized single sentence examples, still the stock in trade of most papers on semantics. For, in cases where the context is not known, it is often impossible to distinguish between direct presuppositional modification of the restrictor and inferential accommodation of the domain of quantification.

Neither Beaver (1994) or von Fintel (1994) advances a proposal that all association with focus effects might be reduced to association with presupposition or association with accommodated variables. This is what we take Rooth (1999), Cohen (1999) and van der Sandt and Geurts (1997a) to be considering. The data we have presented in this section places an obstacle in the way of the complete reduction of association with focus to association with presupposition or even to association with accommodated variables. If a theory based on such a reduction works for VP "always", it is unlikely to work for VP "only", and *vice versa*.

4. Leaners and Extraction

We now examine whether the semantic focus of "only" and "always" can be an element which is phonetically reduced, or which is extracted so that it does not appear within the syntactic scope of the operator. We show that the lack of prominence of an element is sufficient to prevent "only" from associating with that element. On the other hand, for variant sentences with "always", pragmatic mechanisms still produce a reading where the non-prominent element behaves like the semantic focus; i.e., the non-prominent element is realized in the nuclear scope of "always", but not the restrictor.

All these effects provide pointers to the general theme of this paper: that "only" is directly sensitive to intonational prominence in its syntactic scope, while the interpretation of "always" is determined by a less syntactically constrained pragmatic mechanism.

4.1. Leaners

The interaction of prosodically dependent material ("leaners"; Zwicky (1982)) and focus sensitive operators also provides a useful diagnostic to distinguish focus functional operators like "only" from other, indirectly focus sensitive operators like "always".[29] (43) and (44) illustrate the interaction between "only"/"always" and leaners, in this case weak pronoun "'im". While "always" is able to associate with "'im", "only" fails to get the similar reading.

> **Context**: You had many discussions with Sandy, but what I want to know is the extent to which you talked about Fred. Of all the times you talked with Sandy, how often was Fred the person you talked about?

(43)   I [always]$_F$ discussed'im with Sandy.
        'Whenever I discussed someone with Sandy, I discussed Fred.'

(44)   ? I only discussed'im with Sandy.
        'I only discussed Fred (and no one else) with Sandy.'
        (not a possible interpretation of (44))

Note that the intonation suggested in (43), with nuclear stress on "always" is natural, and is easy to explain theoretically: apart from "always", all the other elements of the sentence were given in the

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[29] We have controlled here for so-called "antipronominal contexts" (Postal, 1998); e.g., object position of *discuss* (not antipronominal) vs. the object position of *paint* (antipronominal).

context — the speaker, discussions, Fred and Sandy had already been mentioned explicitly in the prior discourse. So it is unsurprising that focus should have fallen on "always", which was not previously mentioned, and which provided the most important part of the answer to the question "how often?".

A similar argument might lead one to expect that nuclear stress in (44) could felicitously be placed on "only", but it cannot. In order for the sentence to answer the given question, "only" must associate with the NP denoting Fred, and since in (44) this NP is a leaner which cannot carry focus, the sentence is infelicitous in the specified context. Indeed, we cannot find any context such that there is a placement of focus in (44) which produces the reading 'I discussed Fred and no one else with Sandy'.[30]

4.2. EXTRACTION

As a first illustration of the interaction between extraction and focus sensitivity, we will consider modifications of the English sentences in (45) and (46). (45) and (46) arguably have the interpretations in (45a,b) and (46a,b), respectively.

(45)   I said that I always stock Kim's tank with clownfish.

    a.   'I said I stock Kim's and no other tank with clownfish.'

    b.   'I said I stock Kim's tank with clownfish and nothing else.'

(46)   I said that I only stock Kim's tank with clownfish.

    a.   'I said I stock Kim's and no other tank with clownfish.'

    b.   'I said I stock Kim's tank with clownfish and nothing else.'

Consider the following scenario:

> I have two roommates, Kim and Sandy. I always stock my roommates' fishtanks. I stock Sandy's fishtank with goldfish and nothing else. I stock Kim's fishtank with goldfish and clownfish.

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[30] Note here that the infelicity of (44) is independent of placement of focus. "I only discussed Fred with Sandy" is itself felicitous in the given context with stress on both "only" and "Fred". So the infelicity of (44) does not result from sentences with "only" being fundamentally ill-suited to answering "how often" questions. Rather, it results from the fact that "'im" cannot be focussed, whereas "Fred" can.

In (47) and (48), a possible focus of "always"/"only" has been extracted from the bare relative "I said I always/only stock with clownfish".[31] Both (47a) and (47b) are among the possible readings of (47). Surprisingly, (48) lacks the reading given in (48a).[32] We have confirmed these judgments in a small questionnaire study we have conducted using written materials similar to that in (47-48).[33]

(47)   Kim's is $\boxed{\text{the tank}}$ I said I <u>always</u> stock with clownfish.

    a.   'I said I stock Kim's and no other tank with clownfish.' [TRUE]

    b.   'I said I stock Kim's tank with clownfish and nothing else.' [FALSE]

(48)   Kim's is $\boxed{\text{the tank}}$ I said I <u>only</u> stock with clownfish.

    a. * 'I said I stock Kim's and no other tank with clownfish.' [TRUE]

    b.   'I said I stock Kim's tank with clownfish and nothing else.' [FALSE]

(49) and (50) exemplify the same phenomenon with extraction from a *wh*-relative:

(49)   Kim is $\boxed{\text{the guy}}$ who Sandy says she <u>always</u> gives chocolate.

    a.   'Kim is the guy such that Sandy says she gives him and nobody else chocolate.'

    b.   'Kim is the guy such that Sandy says she gives him chocolate and nothing else.'

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[31] It is crucial to this argument that in (47) (and all the extraction examples that follow) that the focus sensitive operator takes scope under an embedding verb like "said". Since the *saying* event is not bound by "always" in (47), it cannot be claimed that the subject of the main clause, which is the apparent semantic focus of "always", is within the syntactic scope or the binding domain of "always".

[32] Aoun and Li (1993:206) and Kayne (1998:159) also mention extraction data for English and Chinese where they observe that the postverbal object associated with "only"/"zhi" ('only') cannot undergo extraction. They don't pursue the implications of this data for other putative focus sensitive operators. Dryer (1994) and Vallduví (1990) discuss somewhat similar extraction data. In contrast to the approach we pursue below, Dryer and Vallduví argue that the extraction data is evidence for a pragmatic theory of association with focus phenomena; i.e., focus sensitive operators do not necessarily associate with focused elements.

[33] In the extraction examples which follow, the relevant occurrence of "always" and "only" have been underlined, and the extracted focus has been boxed.

(50)   Kim is ⟦the guy⟧ who Sandy says she only gives chocolate.

    a. * 'Kim is the guy such that Sandy says she gives him and nobody else chocolate.'

    b. 'Kim is the guy such that Sandy says she gives him chocolate and nothing else.'

We looked through 50 naturally occurring examples of *which*-relatives with "only" in their argument without finding any extracted foci associating with "only". In (51), you do not find the ambiguity present in "we only know the activity of people over a short period in the more usual situation".

(51)   As compared with ⟦the more usual situation⟧ in which we only know the activity of people over a short period, such data raise some challenging statistical and econometric problems.[34]

Wh-interrogatives in English also suggest that the extraction of the focus of "only" is impossible, but extraction of the apparent focus of "always" is possible.

(52)   ⟦What⟧ do you think Kim always gives his mother?

    a. What is the thing such that Kim gives that thing and nothing else to his mother?

    b. What do you think Kim gives his mother and noone else?

(53)   ⟦What⟧ do you think Kim only gives his mother?

    a. * What is the thing such that Kim gives that thing and nothing else to his mother?

    b. What do you think Kim gives his mother and noone else?

4.3. DISCUSSION

To sum up, the data from leaners and extraction has again shown that any theory which treated focus sensitive operators as a homogeneous class is flawed. "Only" fails to associate with leaners and extracted elements while "always" successfully associates with a reduced or extracted focus. Standard accounts of association with focus do not capture this observation.

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[34] *Rapid* (archive of ESRC grant abstracts), British National Corpus.

Consider a semantic account of association with focus (e.g., Krifka (1992)). Recall that semantic accounts insist on the focus of a focus sensitive operator being in the syntactic scope of the focus sensitive operator at some level of representation. For extraction, semantic accounts have two options: (i) traces are F-marked (marked for focus) (Selkirk 1996:561) or (ii) traces are not F-marked. One instantiation of option (i) appears in Barbiers (1995), given as (54). (54) claims that a focus sensitive operator can associate with the trace of its extracted focus.

(54)   A focus particle immediately c-commands (the trace of) its semantic argument. (Barbiers 1995:65)

If semantic accounts choose option (i) they incorrectly allow the impossible reading (56a) of (56). However, if semantic accounts choose option (ii), they will be no better off: such accounts would then disallow (55a).

(55)   Kim is the guy who Sandy says she <u>always</u> gives chocolate.

    a.   'Kim is the guy such that Sandy says she gives him and nobody else chocolate.'

    b.   'Kim is the guy such that Sandy says she gives him chocolate (and nothing else).'

(56)   Kim is the guy who Sandy says she <u>only</u> gives chocolate.

    a. * 'Kim is the guy such that Sandy says she gives him and nobody else chocolate.'

    b.   'Kim is the guy such that Sandy says she gives him chocolate and nothing else.'

Pragmatic accounts (e.g. Schwarzschild (1997)) of focus sensitivity, where (conventional) structural constraints on focus sensitivity can be neutralized by contextual factors, are falsified by the absence of reading (56a). Rather, focus effects on interpretation must be encoded in the meaning of "only". In contrast, the availability of reading (55a) suggests that "always" needs a pragmatic account.[35]

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[35] Barbiers (1995) claims that Dutch focus sensitive operators like "pas" 'just' can associate with extracted elements; eg. (i):

(i)   TWEE boeken$_i$ denk ik dat Jan *pas* t$_i$ heeft gekocht
       'I think that John has bought just two books.' (Barbiers 1995:(68))

We have failed to reproduce this result with other Dutch focus sensitive operators.

5. Analysis

We now suggest how two distinct mechanisms could explain the focus sensitivity of "always" and "only". Our analysis hinges on the claim that "only" is focus functional, but "always" is not. What we mean by this is that the lexical meaning of "only" encodes a dependency on focus marking, but the lexical meaning of "always" does not.

To say that there are focus functional operators in this sense implies that focus must be correlated with a meaning which is grammatically encoded, and this has major consequences for semantics. It means that Montagovian meanings are not sufficient, and that focus related aspects of meaning must be built up compositionally in tandem with classically studied aspects of meaning — this is the conclusion reached by many previous researchers who have studied focus sensitivity; e.g. Rooth (1985), Krifka (1992), and Steedman (1999).

Focus-sensitivity of "only" arises though a lexical dependency on a special compositionally built up aspect of meaning which is related to focus, but focus-sensitivity of "always" does not. Rather, the focus sensitivity of "always" arises through a combination of two factors. First, an implicit argument of "always" is typically dependent on what is salient in the context of utterance, and, second, there is a strong tendency for what is focussed not to be previously salient in the context — see von Fintel (1994). This combination of factors produces focus sensitivity, but does not imply focus functionality.

What, then, are the different meanings that we ascribe to "always" and "only"? One impediment to describing these meanings in a way that makes comparison easy is that previous researchers have varied considerably in the ontology and formal tools they have used to describe each of the operators. We draw on ideas from both event semantics and situation semantics, borrowing from work of Krifka (1989), Bonomi and Casalegno (1993), and von Fintel (1994), amongst others. Bonomi and Casalegno (1993) show that their use of events solves problems which are present in the analysis of Rooth (1985).[36] Our analysis preserves the improvements they make, although this will not be of great significance for the examples we analyze, for all of which a Roothian analysis could have been given. Additionally, Bonomi and Casalegno (1993) show how event based sentence meanings for sentences involving "only" can be

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[36] The problems that Bonomi and Casalegno (1993) observe with Rooth's analysis of "only" concern the fact that his analysis is intensional, being based on quantification over sets of propositions. What Bonomi and Casalgno show is that the use of possible worlds to model intensionality leads to predictions of incorrect truth conditions, and that these problems are avoided in their analysis which is extensional, although involving a domain of abstract entities (events).

derived compositionally. This aspect of their analysis could also easily be carried over to the current paper, although we will not present full derivations here. What is significant for this paper about our adoption of ideas from event and situation semantics is that it allows us to give relatively simple and uniform statements of the meanings of a wide range of examples.

We analyze sentences of the form "NP always VP" and "NP only VP" not as in (1c) or (2c), but rather as having the truth conditions in (57) and (58) respectively:

(57) Truth conditions of "NP always VP":
$$\forall e\ \sigma(e) \to \exists e'\ \rho(e, e')\ \wedge\ q(e')$$

(58) Truth conditions of "NP only VP":
$$\forall e\ p(e) \to q(e)$$

In the above, e and e' are understood to range over what we term *eventualities*, which are happenings or states of the world, or may be thought of as situations or partial models. Eventualities are like the events of Krifka (1989), used in Bonomi and Casalegno's (1993) analysis of "only": (i) there are basic eventualities and complex eventualities; (ii) simple eventualities involve individuals in different roles, for instance you are currently the agent in an eventuality of reading; (iii) complex events have parts which are basic, and may be compared to the situations of von Fintel 1994 in his analysis of "always"; (iv) the relation ρ must be determined contextually, and maps eventualities to eventualities, for instance it could be a function which maps an eventuality e to the set of eventualities which immediately follow e and share the same agent. It is the contextual identification of σ which gives "always" the anaphoric properties we will be interested in in this article, and ρ, which we will term the *domain relation*, will play little role in the analysis. In both (57) and (58), q is understood simply to be the ordinary meaning that the sentence "NP VP" (i.e., with "always" or "only" removed) would have, a property of eventualities. (58) also makes reference to a variable p: this represents the meaning of "NP VP", but minus content related to any focussed parts of the VP. We will term q the *underlying (sentence) meaning*, and p the *VP-defocussed (sentence) meaning*.

5.1. BASIC FOCUS SENSITIVITY

What does all this mean for examples (1) and (2)?

(1) a. Sandy always feeds [Fido]$_F$ Nutrapup.

    b.   Sandy only feeds [Fido]$_F$ Nutrapup.

    c. $\forall x\ feed(sandy, x, nutrapup) \rightarrow x = fido$
        "Everything Sandy feeds Nutrapup to is Fido"

    d. $\forall e\ (feeding(e) \wedge \text{AGENT}(e) = sandy \wedge$
        $\text{THEME}(e) = nutrapup) \rightarrow \text{GOAL}(e) = fido$

(2)   a.   Sandy always feeds Fido [Nutrapup]$_F$.

    b.   Sandy only feeds Fido [Nutrapup]$_F$.

    c. $\forall x\ feed(sandy, fido, x) \rightarrow x = nutrapup$
        "Everything Sandy feeds to Fido is Nutrapup"

    d. $\forall e\ (feeding(e) \wedge \text{AGENT}(e) = sandy \wedge$
        $\text{GOAL}(e) = fido) \rightarrow \text{THEME}(e) = nutrapup$

In our version of the Bonomi / Casalegno / Krifka neo-Davidsonian analysis of events, thematic roles such as *agent* are (partial) functions which map events onto entities. Thus, for all of these examples we would analyze the underlying meaning of the sentence, in which neither focus nor the focus sensitive operator has any effect, as follows:

(59) $q = \lambda e[feeding(e) \wedge \text{AGENT}(e) = sandy \wedge \text{GOAL}(e) = fido \wedge$
       $\text{THEME}(e) = nutrapup]$

The VP-defocussed meaning is simply the same formula minus one or other conjunct; e.g. minus the conjunct specifying GOAL for (1a). After performing simple lambda reductions and using a classical equivalence ($a \rightarrow a \wedge b \equiv a \rightarrow b$), we arrive at (1d) for the meaning of (1b), and (2d) for the meaning of (2b). Note here that under natural assumptions (1d) is logically equivalent to (1c) and (2d) is logically equivalent to (2c). In particular, we need only assume that every event of feeding has an agent, a goal and a theme, and that the following holds in all models:

(60) $\forall x, y, z(\exists e feeding(e) \wedge \text{AGENT}(e) = x \wedge \text{GOAL}(e) = y \wedge$
       $\text{THEME}(e) = z) \leftrightarrow feed(x, y, z)$

What of "always"? If we simply plug the value of q in to the template in (57), and do nothing to resolve the free variables σ and ρ, we derive a common meaning for (1a) and (1b), namely that in (61):

(61) $\forall e\ \sigma(e) \rightarrow \exists e'\ \rho(e, e') \wedge feeding(e') \wedge \text{AGENT}(e') = sandy \wedge$
       $\text{GOAL}(e') = fido \wedge \text{THEME}(e') = nutrapup$

We must then settle how the contextual variables σ and ρ are to be resolved for each of the examples. Here it is important to realize that there is no unique correct resolution for these decontextualized single sentence examples. By definition, contextual variables only get a value in a particular context, so we would need to consider particular utterances of the sentences in particular contexts.

An utterance of (1a) would be felicitous in a context when we were discussing occasions on which Sandy fed some animal Nutrapup. In that case, σ might get set to $\lambda e[\exists x$ it animal$(x) \wedge feeding(e) \wedge \text{AGENT}(e) = sandy \wedge \text{GOAL}(e) = x \wedge \text{THEME}(e) = nutrapup]$. Suppose we assume that ρ is resolved to the identity relation, which we will term id. Assume further a constraint on models that the only things that get fed Nutrapup are animals. In that case, it is easily seen that the truth conditions in (61) would be identical to those in (1d), which in turn are equivalent to the original truth conditions in (1c). Note that these are quite stringent assumptions, and that there may well be other contexts in which (1a) could be felicitously uttered.

Similarly, an utterance of (2a) would be felicitous in a context in which we were discussing occasions on which Sandy fed Fido. Then σ might get set to $\lambda e[feeding(e) \wedge \text{AGENT}(e) = sandy \wedge \text{GOAL}(e) = fido]$. Assuming once again that ρ is resolved to id, (61) would be equivalent to (1d), and hence (2c).

5.2. EXHAUSTIVITY

In the first section of this paper it was noted that while "only" necessarily produces exhaustivity of the focussed constituent, "always" sometimes does not:

(3)   Sandy always feeds [Fido]$_F$ Nutrapup, and she always feeds [Butch]$_F$ Nutrapup too.

(4)   * Sandy only feeds [Fido]$_F$ Nutrapup, and she only feeds [Butch]$_F$ Nutrapup too.

We are now in a position to understand this difference. Applying the principles outlined above, the truth conditions of (3) are predicted to be as in (62), for some choice of σ and ρ,[37] and the truth conditions of (4) are predicted to be as in (63).

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[37] Nothing hangs on the assumption that σ and ρ are kept constant across the two clauses of (3), but it seems plausible that parallelism would enforce this pragmatically.

(62) $(\forall e\ \sigma(e)\ \rightarrow\ \exists e'\ \rho(e,e')\ \wedge\ feeding(e')\wedge\text{AGENT}(e') = sandy\ \wedge$
$\text{GOAL}(e') = fido \wedge \text{THEME}(e') = nutrapup)\ \wedge$
$(\forall e\ \sigma(e)\ \rightarrow\ \exists e'\ \rho(e,e')\ \wedge\ feeding(e')\wedge\text{AGENT}(e') = sandy\ \wedge$
$\text{GOAL}(e') = butch \wedge \text{THEME}(e') = nutrapup)$

(63) $(\forall e\ (feeding(e)\wedge\text{AGENT}(e) = sandy\wedge\text{THEME}(e) = nutrapup)\ \rightarrow$
$\text{GOAL}(e) = fido)\ \wedge$
$(\forall e\ (feeding(e)\wedge\text{AGENT}(e) = sandy\wedge\text{THEME}(e) = nutrapup)\ \rightarrow$
$\text{GOAL}(e) = butch)$

It follows logically from (63) that either there are no events of Sandy feeding something Nutrapup, or else Fido is Butch. The first of these alternatives violates a necessary condition for felicitous and accurate use of "only", which requires that there must be events in which the defocussed meaning holds.[38] The second alternative violates various pragmatic requirements (non-coreferentiality of distinct names, informativeness of both conjuncts) and possibly is not even considered by typical hearers.

The truth conditions in (62) are not inherently contradictory as there are many choices of σ and ρ for which they express a contingent property of the world. For example, if σ is the set of events in which Sandy feeds some number of dogs, and ρ is *temporal-and-physical-part-of*, then (62) would state that every event in which Sandy fed some dogs was one in which she fed Fido, and every event in which she fed some dogs was one in which she fed Butch. This is plainly non-contadictory. Of course, there are many other choices for contextual resolution of σ and ρ that also yield contingent truth conditions. We could keep ρ as it is, and set σ to the set of Tuesday afternoons (or, strictly, the set of complex events such that each complex event includes all the subevents that took place on a Tuesday afternoon). The point is that (62) is not contradictory, and thus that we correctly predict that (3) should be felicitous in some contexts.

5.3. LEANERS

Let us return to examples (43a) and (44a), repeated with additional anaphoric indices as (64) and (65) respectively. Let us suppose that "discuss" has thematic roles AGENT, THEME(the person or thing under discussion), and COPARTICIPANT, so that the underlying meaning would be given by q in (66).

(64) I always discussed'im$_i$ with Sandy.

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[38] For discussion of this condition, see footnote 2.

(65)   I only discussed'im$_i$ with Sandy.

(66) $q = \lambda e\, [discuss(e)\ \wedge\ \text{AGENT}(e) = speaker\ \wedge\ \text{THEME}(e) = x_i\ \wedge$
$\text{COPARTICIPANT}(e) = sandy\,]$

For "only" the lack of a reading corresponding to association with the leaner follows from the the fact that, since the leaner cannot be focussed, focus must be either on the subject, or on some other element in the VP. In the case of subject focus, the VP-defocussed meaning will be identical to the focal meaning, and we drive the trivially true meaning for (65): $\forall e\, q(e) \to q(e)$. We suppose that some pragmatic or grammatical mechanism blocks this derivation. On the other hand, if the focus is in (or on) the VP c-commanded by "only", various readings are available, none of which correspond to association with "'im". As an illustrative example of a possible reading we predict for (65), suppose the entire VP "discussed'im$_i$ with Sandy" is in focus. The VP-defocussed meaning of the sentence would then be $\text{AGENT}(e) = speaker$, and the reading that would result would be as shown in (67), not the impossible reading that would correspond to association with the leaner, as shown in (68):

(67) $\forall e\ \text{AGENT}(e) = speaker \to (discuss(e)\ \wedge\ \text{THEME}(e) = x_i\ \wedge$
$\text{COPARTICIPANT}(e) = sandy)$

(68) $\forall e\ (\text{AGENT}(e) = speaker\ \wedge\ discuss(e)\ \wedge\ \text{COPARTICIPANT}(e) =$
$sandy) \to \text{THEME}(e) = x_i$

As regards (64), the context given earlier for the example would make salient a set of occasions when the speaker was involved in a discussion with Sandy. Thus the quantificational domain σ might be as given in (69).

(69) $\sigma = \lambda e\, [\text{AGENT}(e) = speaker\ \wedge\ discuss(e)\ \wedge$
$\text{COPARTICIPANT}(e) = sandy\,]$

Merely by identifying the domain relation ρ with the identity relation, and using the standard template for sentences involving "always" $(\forall e\, \sigma(e) \to \exists e'\, \rho(e, e') \wedge q(e'))$, we would then derive (68), the meaning that was unavailable for the parallel example with "only".

5.4. EXTRACTION

We will now see how examples (47) and (48), repeated below, can be analyzed: analysis of the other extraction examples we have considered would follow similar lines.

(47)   Kim's is the tank I said I always stock with clownfish.

(48)   Kim's is the tank I said I only stock with clownfish.

By definition, gaps cannot carry intonational prominence. It is crucial to our argument, and seems a natural move, that we take this a step further: we assume that gaps cannot be focus marked at any level of syntactic analysis (contra Selkirk (1996:561); see Section 4.3). As a consequence of this, we predict that (48) can only be felicitous if one of "stock", "with", "clownfish", "with clownfish" or "stock with clownfish" is focus marked. For instance, if "clownfish" is focus marked, then the gapped clause in (70) will have an underlying meaning, the ordinary interpretation of (71), given by q in (72), and a VP-defocussed meaning as given by q in (73). Plugging p and q into the template $\forall e \; p(e) \rightarrow q(e)$, and reducing, we derive the meaning given by ϕ in (74) for the gapped clause.

(70)   I only stock t_i with [clownfish]$_F$.

(71)   I stock t_i with [clownfish]$_F$.

(72) $q = \lambda e \; [stock(e) \; \wedge \; \text{AGENT}(e) = speaker \; \wedge \; \text{LOCATION}(e) = x_i \; \wedge \; \text{THEME}(e) = clownfish]$

(73) $p = \lambda e \; [stock(e) \; \wedge \; \text{AGENT}(e) = speaker \; \wedge \; \text{LOCATION}(e) = x_i]$

(74) $\phi = \forall e \; (\; stock(e) \; \wedge \; \text{AGENT}(e) = speaker \; \wedge \; \text{LOCATION}(e) = x_i \;) \; \rightarrow \; \text{THEME}(e) = clownfish$

To give a meaning for (48), we need to analyze both attitude verbs and binding of gaps. Assuming that a separate event is introduced for the verb "said", that the complement of "said" has an intensional thematic role ATTITUDE, ignoring tense, and assuming that the trace variable is bound by an existential quantifier, we arrive at the following for the interpretation of (48):

(75) $\exists e' \exists x_i \; owner(x_i, kim) \; \wedge \; fishtank(x_i) \; \wedge \; say(e') \; \wedge \; \text{AGENT}(e') = speaker \; \wedge \; \text{ATTITUDE}(e') = {}^{\wedge}\phi$

Crucially, (75) does not describe a context like that given earlier, where the speaker admitted to having stocked Kim's tank with two types of fish.

What if some other element than "clownfish" had been focus marked in (48)? If "stocked" had been focus marked, we would have derived an interpretation that could be paraphrased as "Kim's is the tank of

which I said that stocking was the only thing I did that involved it and goldfish". In fact, the speaker had made no such prior claim, so this possibility for focus either produces a false interpretation, or is simply ruled out pragmatically as an implausible interpretation. Similarly, pragmatic implausibility or clear falsity would presumably rule out focus on the entire VP, or on "with", although we do not attempt full analyses here. The only remaining alternative, that of there being no focus within the scope of "only", would produce a trivial interpretation for the embedded clause. Again, this can be ruled out either on grounds of pragmatic infelicity, or on grounds of a gramatical stipulation that "only" must have a focus marked consituent in its syntactic scope.

Turning now to (47), we start off by examining the embedded clause (76).

(76)   **Gapped Clauses**
        I always stock t_i with clownfish.

The interpretation of a sentence with "always" is semantically underspecified, and we need to consider how to resolve the domain restriction. Various sets of events have been mentioned explicitly in the context, and still others are available through further reasoning.

Suppose that the only focus marked constituent in (47) is "Kim's". Then (76) is completely destressed.[39] Perhaps the hearer takes this as evidence that of the many salient sets of events, it is the set of events of the speaker stocking tanks with clownfish that is now under discussion. If so, the domain restriction of "always", σ, may be set as follows:

(77) $\sigma = \lambda e \ [stock(e) \ \wedge \ \text{AGENT}(e) = speaker \ \wedge \ \text{THEME}(e) = clownfish]$

---

[39] It is possible to read (47) with no further pitch accent after "Kim's", although the length of the sentence makes this seem a little forced. Alternatively, "clownfish" can have a secondary accent. More exactly, "Kim's" can be given a sharp rise and fall that in the ToBi system (Pierrehumbert and Hirschberg, 1990) would be denoted H*LL%, and "clownfish" can be given a 'wiggly' up-down-up accent that is sometimes said to mark contrast and/or topic, H*LH% in ToBi. If the entire H*LL% were to fall on "Kim's", then we should also find significant lengthening in this word, and a slight hiatus (possibly difficult to detect given the slow decay of the final sibilant) before the onset of "is". The intonation phrase boundary marker, H%, might also appear later in the sentence, for instance on "tank", which would then be followed by a slight pause before the onset of "I", which itself might get a small pitch accent. If the secondary accent on "clownfish" does mark topicality, that would be grist to our mill.

Note that, so far as we can tell, "only" can associate with H*LH% just as effectively as it can with H*LH%, so we suggest the working hypothesis that both these intonation phrase types can be reduced to focus marking for the purposes of semantic interpretation, even though their pragmatic functions may differ. Further empirical work is needed here.

If the domain relation ρ is set to identity, then what will result for the meaning of (76) will be as in (78), which may be plugged into (79) to get the interpretation of the complete sentence, (47).

(78) $\psi = \forall e \ (\ stock(e) \ \wedge \ \text{AGENT}(e) = speaker \ \wedge \ \text{THEME}(e) = clownfish) \ \rightarrow \ \text{LOCATION}(e) = x_i$

(79) $\exists e' \exists x_i \ owner(x_i, kim) \ \wedge \ fishtank(x_i) \ \wedge \ say(e') \ \wedge \ \text{AGENT}(e') = speaker \ \wedge \ \text{ATTITUDE}(e') = {}^{\wedge}\psi$

This, of course, is just the meaning that would be blocked for the equivalent sentence with "only", (48). What we must stress here is that it is not essential to our analysis that we describe in detail a convincing route by which (47) gets the interpretation we have just described. On the contrary, we suggest that there are many routes, and many other interpretations. What is important is that this interpretation is not blocked.

Since "always" obtains its domain pragmatically, syntactic contingencies like unbounded dependencies are of little significance to the interpretation of "always", except insofar as they mark information structure. In the case at hand, the use of a construction which focalizes "Kim" is plausibly connected with the availablity of a reading in which the "always" clause ends up saying of a certain set of events that they all involved Kim in some way (they were events of stocking Kim's tank). But other plausible connections could also be made.

What we predict, in fact, is that there will typically be no single dominant reading (i.e., single choice for the domain restriction) for a sentence with "always", but that a number of readings should be available, whereas the range of readings available for utterances of comparable sentences with "only" should be much reduced. In other words, if you are not convinced that in the context we described (47) gets the reading in (79), that is unsurprising, although many respondents give judgements in accord with them having obtained this reading. The only strong claim we make about how any one person will interpret the examples at hand is that they will definitely *not* interpret (48) as having the meaning in (79). The reason is simple: "only" never associates with a gap.

5.5. FURTHER WORK

This article reports ongoing work, and a larger manuscript is currently in preparation (Beaver and Clark, 2001). We aim to build on what is presented here but extend it in three directions. First, we offer still

wider empirical support and generalization of our analysis[40]; second, we consider the most prominent argument in the literature against part of the position we advocate, and third we provide more of the details underlying the theoretical analysis.

With regard to empirical support for our analysis, we show that the effects we have discussed are not restricted to English: cognates of "always" and "only" in a range of Germanic and Romance languages behave exactly as the theory presented here would suggest, and related phenomena occur in non-Indo-European languages such as Japanese and Chinese.[41]

The aspect of our position that has been most severely attacked in the literature is the claim, first made explicit in Rooth (1985), that "only" is what we have termed *focus functional*. Various authors have discussed cases of *second occurrence focus* illustrated in (80). The key fact about (80) is that "only" appears to associate with "the graduate students" in (80B), although it is claimed that this NP lacks prosodic prominence.

(80)   A.   Eva only gave xerox copies to [the graduate students]$_F$.

        B.   (No,) [Petr]$_F$ only gave xerox copies to [the graduate students]$_{SOF}$. (Partee 1991:31)

Our response to such examples involves challenging not merely the way they been analyzed, but also the empirical claim that the second occurrence of "the graduate students" lacks prosodic prominence. Our understanding of the phenomenon is grounded in psycho-acoustic data we have collected, to be reported separately in Beaver, Clark and Wolters (2001).

The third respect in which the current account must be extended concerns details of the formal analysis. Our aim is to provide a compositional grammar fragment using Bonomi and Casalegno (1993) as a starting point. We also hope to refine the pragmatic analysis of "always" on the basis of ideas suggested by Roberts (1996) and Schwarzschild (1997), and to extend the treatment of "only" to account for cases not discussed here in which it is restricted by a combination of focus and contextual effects (cf. Rooth (1992)).

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[40] One point, which perhaps by now will seem unsurprising, is that there are still further phenomena diagnostic of the difference between "always" and "only". In Beaver and Clark (2001), we also discuss examples from in-situ *wh*-phrases and ellipsis constructions.

[41] We have presented cross-linguistic evidence of this sort in talks at the 200O LSA Annual Meeting and in departmental colloquia at the University of California at Santa Cruz and the University of California at Berkeley, and at Stanford University.

The data we have reported here, and even the larger survey in Beaver and Clark (2001), is centered around (cognates of) "always" and "only". In the future, this study should be extended to a wider range of focus sensitive constructions. Some of the phenomena we have looked at are relevant to only a handful of focus sensitive constructions. For example, polarity licensing phenomena can be used only in the case of constructions that involve contexts of varying monotonicity, such as universal quantifiers. However, other phenomena, such as those based on presupposition and extraction effects, have the potential to be used as the basis of general diagnostic tests for focus functionality.

Based on a preliminary consideration of phenomena involving a wider range of focus sensitive operators in English, a number of operators seem to pattern with "only". For example, the exclusive focusing adverbials (Nevalainen, 1991) (e.g. "exclusively", "just", "merely", "solely" and "simply") pattern with "only". Other candidates which deserve further investigation but seem to be focus functional are "like" (e.g. "They are like sending [eggs]$_F$ to Maria" (Ross and Cooper, 1979)), "totally", "really", "hardly" and "fuckin' ". Adverbs of quantification such as "usually" and "sometimes", pattern with "always".

In spite of these encouraging indications of the generality of our approach, we must inject a cautionary note. What has made it relatively easy for us to develop effective ways to distinguish "always" and "only" empirically is that for these two operators the position of focus is correlated with truth-conditional differences. But for many focus sensitive constructions (e.g. negation, "even", "also"), focus apparently determines discourse function rather than truth conditions. This makes the collection of robust data difficult. So it may yet take many years and many other researchers to complete the project of classifying the full range of focus sensitive constructions according to whether they are focus functional.

In conclusion, we have shown in this paper that it is essential to allow considerable *wiggle room* in the analysis of sentences containing "always", but that the interpretation of sentences containing "only" is much more constrained. One might have thought that since grammar makes available such a powerful resource as focus functionality, that resource would be used wherever possible in preference to the processing intensive task of pragmatic resolution. We have not shed any light on this processing issue, but we have shown that focus functionality is not a part of the lexical meaning of "always". One might also have thought that if pragmatic mechanisms are sufficiently powerful to account for the focus sensitivity of "always", then those same mechanisms should also be able to account for the focus sensitivity of "only". If so, then, at least as regards focus sensitivity, natural language semantics would

need no special component for focus and could remain in its pristine Montagovian state. We have shown why it cannot.

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