



UNIVERSITY OF GOTHENBURG
Department of Philosophy, Linguistics and Theory of Science

Om bara

- an analysis of minimal sufficiency readings in conditionals

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Author: Anna Lindahl

Supervisor: Elisabeth Coppock

Examiner: Torbjörn Lager

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1. Introduction

1.1 General introduction

One might think that a word such as 'bara' (a Swedish word meaning 'only' or 'just') always means the same thing. But, take a look at (1). See what happens to the meaning when we remove the antecedent, resulting in example (2).

- (1) Bara mamma kommer, så får du glass.
Just mum comes then have you ice-cream.
“If just mom comes you can have ice-cream.”

- (2) Bara mamma kommer.
Only mum comes.
“Only mum comes.”

In (2), 'bara' signals what it usually signals, that the only person who comes is mum. But in (1) the interpretation is that as when mum comes, you can have ice-cream. This difference in 'bara' will again be exemplified.

- (3) Jag äter bara grönsaker.
I eat only vegetables.
'I only eat vegetables'

- (4) Bara lukten av mat gör mig illamående.
just DET.smell of food makes me sick
'Just the smell of food makes me feel sick.'

(3) is an example of the *exclusive* reading of 'bara'. In (3) it excludes all other alternatives to vegetables. It can be paraphrased as *the only thing*. A paraphrase of (3) would be “The only thing I eat is vegetables”. Example (2) is also an exclusive reading. The most prominent reading of (4) will be called a *minimal sufficiency* reading (MSR) using Grosz's (2012:229) term. (1) is also an MSR. The minimal sufficiency reading can be paraphrased as *no more than*. For example, no more than the smell of food is required to make me feel sick is, as in (4). The exclusive reading is also available in (4), and (4) would then mean “The only thing that makes me sick is the smell of food”.

There are two different theories concerning these readings, but neither can account for all the facts surrounding minimal sufficiency readings. Grosz (2012) has a theory that splits the two readings into two separate lexical items. Coppock and Beaver (2013b) have a theory which analyses the difference between the readings as a matter of scope. Based on new observations concerning the distribution of MSRs, mainly that MRSs seem to always occur in causal environments, this paper presents a unified analysis, using Kratzer's (1983) semantics for conditionals.

This paper will use examples with the Swedish word 'bara' and examples with English 'just', but this analysis should work for any language that has an 'only'-type word that behaves like 'bara'. The term 'only'-type is here used to refer to words having the same function as 'bara', 'only' or 'just'. These words are in a sub-class to exclusives.

1.2 Purpose and aims

The goal of this paper is to show that it is possible to have an unified analysis of the word 'bara' and other 'only'-type words. The question being answered is "Is it necessary to posit two distinct 'only's in order to account for minimal sufficiency readings or can a single 'only' perform double-duty?" The idea behind the new analysis is that 'bara' and other 'only'-type words work in the same way regardless of reading. The Swedish 'bara' is chosen because it is in the native language of the author, thereby giving the best intuitions.

2. Background

In this part the different readings will again be exemplified. We will look at methods to distinguish the readings from each other and introduce the concept of focus. Previous works concerning the specific word 'bara' will be looked at. We will then look at general theories concerning the different readings. We will look especially at the Coppock and Beaver (2013b) analysis since their ideas will be incorporated in the new theory. An overview of Kratzer's (1983) semantics will also be given because this is the semantics which will be used in the new analysis.

2.1 Readings

We'll once more look at two examples of the different readings of 'bara' so that the reader will have no doubt about what is referred to when the terms exclusive and minimal sufficiency reading are

being used. To a first approximation, an exclusive reading is a reading that can be paraphrased with “the only thing”, as in (5). This reading of 'bara' excludes all other possibilities; I don't eat anything else than vegetables.

- (5) Jag äter bara grönsaker.
I eat only vegetables
'I only eat vegetables'

A paraphrase would be “the only thing I eat is vegetables”. A minimal sufficiency reading on the other hand doesn't exclude possibilities, it merely tells us a minimal sufficient level. For example, (6) doesn't exclude other things making me shiver. If I saw him *and* touched him, I would still shiver. It tells us that the thought alone is enough to make me shiver. But it doesn't exclude the possibility that other things would make me shiver, such as being cold or thinking about snakes. A minimal sufficiency reading can be paraphrased with “is sufficient to”, as in “the thought of him is sufficient to make me shiver”.

- (6) Bara tanken på honom får mig att rysa.
Just DEF.thought of him makes me to shiver.
'Just the thought of him makes me shiver.'

The exclusive reading is also available in (6), although a bit harder to see. An exclusive reading would be “The only thing that makes me shiver is the thought of him”. In examples such as (7) the ambiguity is easier to see.

- (7) Om han bara tittar på en annan tjej, så blir hon arg.
If he just looks at a another girl then becomes she mad.
'If he just looks at another girl, she gets mad'

Example (7) could be interpreted as “if he just looks at another girl, she gets mad because she doesn't want him to look at anyone else”. This would be an MSR. But it could also mean that if he just looks at another girl and does nothing more, for example talk to another girl, she gets mad because she is trying to set him up with someone. This would be an exclusive reading.

2.2 Diagnostics and focus

In a previous paper concerned with the different readings of 'bara' the goal was to find ways to separate the two readings when looking at a sentence containing 'bara' (Lindhahl, 2014). The idea

was that in finding a way of separating the different readings one would also find out clues as to how to analyze the different readings and understand what they are.

Take a look at (8). We previously determined that (8) has an exclusive reading. We can also see that if we paraphrase (8) with “det enda” (“the only thing”) the paraphrase is equal to the original sentence.

(8) Jag äter bara grönsaker.

'I only eat vegetables.'

Paraphrase: Det enda jag äter är grönsaker.

'The only thing I eat is vegetables.'

If we apply the “the only thing”-paraphrase to example (9), in which the most prominent reading is the minimal sufficiency reading, we do not get a paraphrase that is equal to the original sentence.

(Assuming that it is the MSR we want to compare to.)

(9) Bara tanken på honom får mig att rysa.

Just DEF.thought of him makes me to shiver.

'Just the thought of him makes me shiver.'

Paraphrase: “Det enda som får mig att rysa är tanken på honom”.

The only thing which makes me to shiver is DEF.thought of him

'The only thing that makes me shiver is the thought of him.'

If we instead use a paraphrase with “räcker för att” ('is sufficient to') we get a sentence which is equal to the original MSR sentence.

Paraphrase: “Tanken på honom räcker för att få mig att rysa.”

DEF.thought of him suffices for to make me to shiver

'The thought of him is sufficient to make me shiver.'

We can use this paraphrase on our previous exclusive example. As we can see the “räcker för att”-paraphrase is not equal to the original sentence.

Paraphrase of (8): Grönsaker räcker för att jag äter.

Vegetables is sufficient for that I eat. ??

From this we can conclude that these paraphrases can help in distinguishing the readings from each other. But how can we generalize these paraphrases so that they work for all examples? In Lindahl 2014 and in this paper a generalized way of distinguishing the readings is called a diagnostic.

Because 'bara' and other 'only'-type words is flexible in its syntactic distribution we need a diagnostic which does not depend on syntax. I've chosen to split up the sentences in parts based on their information properties. This is done based on focus.

What is focus? In a sentence, focus is often put on new information. Depending on the focus in a sentence the truth-value of that sentence can differ, as we will see below. Focus will also be further explained in section 2.4.

Another motivation for choosing focus as a way of splitting up examples is that 'bara' is a focus-sensitive word (Wijk-Andersson, 1991:3, Beaver & Clark, 2009:1-2). See the difference between (10a) and (10b). In Swedish as well as in English, focus is often marked by prosodic emphasis.¹

(10a) Jag kan bara se *Camilla*.

'I can only see *Camilla*.' (And no one else)

(10b) Jag kan bara *see* Camilla.

'I can only *see* Camilla.' (I cannot hear her)

(Example modified from Rosenkvist, 2004:181)

If we look at example (12a) and (12b) of the exclusive 'bara' we can see that the appropriate paraphrase of the reading depends on the focus. In the sentences below, focus is marked with capitals. This also motivates the use of focus in the diagnostics.

(11a) I regret that I only SPOKE to him.

(I did not kiss him, for example)

Paraphrase: I regret that the only thing I did was speak to him.

(11b) I regret that I only spoke to HIM.

(I did not speak to anyone else.)

Paraphrase: I regret that the only person I spoke to was him.

Using focus as a way of generalizing the paraphrases, we can make diagnostics of the paraphrases. The diagnostic meant to pick out the exclusive reading is then “the only thing that BACKGROUND

¹ For more on the relation between focus and prosodic emphasis, see Beaver and Clark (2009, chapter 2).

is FOCUS”. The background is simply everything that isn't focus. Example (12) is another example of an exclusive reading with a paraphrase. The focus is on 'candy'.

(12) Jag köpte bara godis.

I bought only candy.

“I only bought candy.”

Paraphrase:”Det enda jag köpte var godis.”

'The only thing I bought was candy.'

The diagnostic meant to pick out the minimal sufficiency reading is “FOCUS is sufficient for BACKGROUND”. If we look at (13), we can see that a paraphrase with this diagnostic works well. The focus is the whole antecedent; 'if he just looks at another girl'.

(13) Om han bara tittar på en annan tjej, så blir hon arg.

If he just looks at a another girl then becomes she mad.

'If he just looks at another girl, she gets mad.'

Paraphrase: Om han tittar på en annan tjej räcker det för att göra henne arg.

'If he looks at another girl, it is sufficient to make her mad.'

From this we can conclude that (13) has a MSR. But what if we apply the exclusive diagnostic “det enda”?

Paraphrase: 'Om det enda han gör är att titta på en annan tjej så blir hon arg.'

'If the only thing he does is look at another girl, she gets mad.'

Both the paraphrase meant to pick out the exclusive reading and the diagnostic for minimal sufficiency readings works. This means that both readings are available in (13).²

2.2 Previous work on the word 'bara'

The Swedish 'bara' has been analyzed before, mainly by Wijk-Andersson (1991) in her thesis *Bara i fokus* and Rosenkvist (2004) in his thesis *The emergence of conditionals subordinators in Swedish*. In *Bara i fokus*, Wijk-Anderson (1991) studies the semantic and syntactic usage of 'bara' and its equivalents over time. It is mentioned that 'bara' sometimes has a weaker reading than the exclusive reading, which would be something like our minimal sufficiency reading. It is also included that 'bara' appears in many different syntactic contexts and that 'bara' often appears in modal contexts,

² For more on diagnostics, see Lindahl 2014.

but not in which of these the weaker-than-exclusive reading of 'bara' is available (Wijk-Andersson, 1991:160-164).

Rosenkvists analysis focuses on 'bara' as a conditional subordinator. This is mostly done from a diachronic perspective. In Swedish, 'bara' alone can be used as a subordinator, as in (14).

- (14) Bara jag tittar på mat så mår jag illa.
Just I look at food then feel I sick.
'If I just look at food I feel sick.'

He states that when 'bara' is used as a conditional subordinator it has two different sub-meanings. These are not the same as our previous exclusive and minimal sufficiency readings. One is the *desiderative* one which expresses wishes, as in (15) (Rosenkvist, 2004:172,180).

- (15) Bara jag kunde sjunga!
Only I could sing!
'If only I could sing!'

The other sub-meaning of 'bara' in as a conditional subordinator is that it is used to underline that the condition in the antecedent of a conditional is sufficient enough cause for the event in the consequent (Rosenkvist 2004:172). This *is* similar to our minimal sufficiency reading. It is also mentioned that 'bara' has an exclusive reading, and when it does it incorporates a negative element. This negative element also is present in desiderative 'bara'. The negative element would be something like 'no more than, nothing but'. We will see later that a negative meaning component in exclusive 'bara' is something that is common in theories about 'only'-type words. Rosenkvist (2004:183) claims that what differentiates the exclusive 'bara' from the desiderative 'bara' is the focus.

In summary, these previous studies of 'bara' discusses that the word can have different readings and mentions where they occur. However, they don't discuss in detail how these readings work.

2.4 Previous theories concerning the readings

As mentioned above, there are two existing theories about how to analyze the different readings of 'only'-type words. These theories are by Grosz (2012) and Coppock and Beaver (2013a,b) respectively. Both of these theories builds upon the assumption that 'only'-type words have a

positive and a negative meaning component. This idea is previously developed by Beaver and Clark (2008).

2.4.1 Beaver and Clark

According to Beaver and Clark (2008:260) 'only'-type words are made up by a positive and a negative component. This is adapted by Coppock and Beaver (2013a,b).

The negative and positive component modifies the answers to the *question under discussion* (QUD), or the *current question* (CQ) (Coppock and Beaver, 2013a:158). The idea behind the CQ is that every statement answers a question. The CQ is what is currently being answered by a statement. Formally, the current question is just the set of its answers. In (16), a CQ would be “Who is coming?” (Coppock & Beaver, 2013b:22-23).

(16) Only John is coming.

If we make the CQ explicit as in (17) and (18) we can see that the answer to the CQ is what is in focus in the sentence. In (17) the question is who Ben invited to the party. The focussed element is naturally John and not Ben in this case.

(17)A: Who did Ben invite to the party?

B: Ben invited JOHN.

B': #BEN invited John.

(18)A: Who invited John to the party?

B: BEN invited John to the party.

B': Ben invited JOHN to the party.

How do the positive and negative component work? The positive component is presupposed and is called the 'prejacent'. The prejacent is the sentence with the 'only'-type word removed. It can be paraphrased as “at least”. See (18).

(18) I only see Erik.

Prejacent: I see (at least) Erik.

The negative component is what is at issue in the sentence and what is asserted. It can be paraphrased as “no more than” or “at most”. In (18), it would be that I see no one else than Erik. The negative component asserts that *at most* I see Erik. The positive component presupposes that I see *at least* Erik. Together, this means that I only see Erik.

Beaver and Clark (2008:260) makes these components explicit with the use of a MIN and a MAX operator. These components are also adapted by Coppock and Beaver (2013a:158). The MIN operator corresponds to the positive component, *at least*, and is presupposed, and the MAX operator corresponds to the negative component, *at most*.

As stated above, the MAX and MIN operators put constraints on the answer to the CQ. The set of answers to the CQ is what MAX and MIN operate on. Both MAX and MIN depend on the context, as it is the context that provides the CQ. Given a context S, this dependence is written MAX_S .

If we look at (16) again, the CQ would be “Who's coming?”. Possible answers to this could for example be “John”, “John and Yoda” or “Jesus and Yoda”.

(16) Only John is coming.

The prejacent in (16) is “John is coming” and we'll call it P. If we apply the MIN operator to P it tells us that there is some answer to the CQ that is at least as strong as P. In (16) $MIN_S(P)$ means that at least John is coming. This would mean that the answers to the CQ which doesn't include John is not true. “Jesus and Yoda” is not an acceptable answer to the CQ.

The MAX operator tells us that there is some answer to the CQ that is at most P. In (16) $MAX_S(P)$ means that at most John is coming (Coppock & Beaver, 2013b:22). “John and Yoda” is not an acceptable answer anymore. The only answer that is left now is “John”, and that corresponds to the meaning of (16), that only John is coming.

2.4.2 Coppock and Beaver

Following Beaver and Clark, Coppock and Beaver (2013b:02) assumes that 'only'-type words have a negative and positive meaning component. They also use the MIN and MAX operators to analyze 'only'-type words and see these operators as limiting the answers to the CQ. Coppock and Beaver applies this analysis to the minimal sufficiency reading and can therefore account for both readings.

Coppock and Beaver makes the distinction between the readings based on scope. The scope can be said to be what the 'only'-type word associates with. Minimal sufficiency readings occur when the scope is within in the NP (Coppock & Beaver, 2013b:29). (19) is thus interpreted as “Something that is only the thought of him makes me shiver”.

- (19) Bara tanken på honom får mig att rysa.
Just the.thought of him makes me to shiver.
'Just the thought of him makes me shiver.'

The negative and the positive components are still present. No more than the thought is enough to make me shiver and at least the thought can make me shiver. But something else could still make me shiver. This is the minimal sufficiency reading. The scope in (19) is over “the thought” and not over the VP, and can therefore not be interpreted as an exclusive reading, which would be “The only thing that makes me shiver is the thought of him”. Coppock and Beaver (2013b:30) argue that since it is the scope that determines the reading no extra lexical item is needed, as proposed by Grosz (2012).

2.4.3 Grosz

Grosz's (2012) analysis splits the two readings into two separate lexical items, with different semantic components. He calls these *only*₁ and *only*₂, each corresponding to our exclusive and minimal sufficiency readings, respectively.³ This theory should be valid for the Swedish 'bara', since it concerns the phenomenon with minimal sufficiency readings in several languages.

According to Grosz, *only*₁ is composed by three meaning components. The first is *presupposition*

³ According to Grosz, the English word *only* doesn't give rise to minimal sufficiency readings, and therefore the use of *only*₁ can be a little misleading, but I'll use the same terminology as Grosz for simplicity. In English, the word *just* is more suited to be analyzed this way (Grosz 2012:241, 245).

I; “The modified proposition or higher scalar alternative is true” (Grosz, 2012:226). In (20), the proposition modified by 'bara' is “I have one book”. Presupposition 1 in this case means that I have one or more books. When uttering (20) it's presupposed that I have one or more books. This corresponds to the MIN operator, the positive component.

(20) Jag har bara en bok.
I have only one book.
'I only have one book.'

The next meaning component of *only*₁ is *presupposition 2*; “The modified proposition is low on the salient scale” (Grosz, 2012:226). The scale referred to is a scale relevant to the context, in this case the scale would be the number of books one owns. In (20) this means that “I have one book” is presupposed to not be a lot.

The last meaning component concerns the truth-conditional content; “There is no higher scalar alternative that is true.” (Grosz, 2012:226). This corresponds to the MAX operator, the negative component. If we apply this to (20) this means that I don't have more than one book.

Presupposition 1 states that no lower alternative is true so we have at least one book. Presupposition 2 says that this is not a lot. The truth-conditional content says that no higher scalar alternative is true, so we have no more than one book. Together these three components make up *only*₁.

*Only*₂, which corresponds to the minimal sufficiency reading, is made up of two meaning components. *Only*₂ also has *presupposition 2*; “the modified presupposition is low on the salient scale” (Grosz, 2012:226). In *only*₂, this is often the speaker's preference scale (Grosz 2012:228). In (21), *presupposition 2* gives us the presupposition that “the thought of him” is low on a salient scale.

(21) Bara tanken på honom får mig att rysa.
Just the thought of him makes me to shiver.
'Just the thought of him makes me shiver.'

Grosz (2012:229) uses “which is not a lot” and “easy to achieve” to paraphrase the minimal

sufficiency reading. Presupposition 2 is used to account for this lowness presupposition.

The second component of only_2 is that it is truth-conditionally vacuous. In other words, only_2 has no impact on the truth-conditional content of the sentence. This makes it impossible for (21) to have the exclusive reading, that “the only thing that makes me shiver is the thought of him.” Thus, only_2 is made up of the lowness presupposition in form of presupposition 2 and the fact that it has no truth-conditional value.

2.4 Kratzer, conditionals and causality

An important observation in this paper is that minimal sufficiency readings of 'bara' often occur in causal environments. In sentences that express a causal relation between two events the part of the sentence that describes the causing event is a causal environment. One of the most typical examples of causality is conditionals. A conditional is made up of an antecedent and a consequent, often in the shape of “If P then Q”.

If we look at the minimal sufficiency readings in (22) or (23), both of them can easily be paraphrased to the classic shape of a conditional. This is why a theory of conditionals is suitable to apply to minimal sufficiency readings. The focus on conditionals is chosen because it's the most straightforward case of a causal statement. In a conditional the cause is already in the form of proposition. Despite the chosen focus on conditionals I expect this theory to extend to other causal environments as well. As we can see below, MSRs can be paraphrased in the shape of “If P then Q”.

- (22) Bara tanken på honom får mig att rysa.
Just the.thought of him causes me to shiver.
'Just the thought of him makes me shiver.'

Paraphrase: Om jag bara tänker på honom så ryser jag.
If I just think of him then shiver I.
'If I just think of him I shiver.'

- (23) Gör bara din läxa så får du glass.
Do just your homework then can you ice-cream.
'Just do your homework, then you can have ice-cream.'

Paraphrase: Om du bara gör din läxa så får du glass.

If you just do your homework then can you ice-cream.

'If you just do your homework you can have ice-cream.'

The fact that MSRs can be paraphrased this way together with the observations that MSRs often occur in causal environments⁴ gives us a reason to look at Stalnaker's (1968) analysis of conditionals:

First, add the antecedent (hypothetically) to your stock of beliefs;
second, make whatever adjustments are required to maintain consistency
(without modifying the hypothetical belief in the antecedent); finally, consider
whether or not the consequent is the true. (Stalnaker 1968:102)

If we adapt the Stalnakerian way, we can analyze minimal sufficiency readings as “You only need to add this to your stock of beliefs”. For example in (24), we only add the thought of him to make me shiver.

(24) Bara tanken på honom får mig att rysa.

'Just the thought of him makes me shiver.'

Kratzer (1983) has an analysis of conditionals which is in line with Stalnaker's (1968) analysis and we will use her framework in the new theory. We will take a look at her analysis of a standard conditional in order to become familiar with her ideas.

Kratzer (1983:67) argues that conditionals include a modal operator. It can be explicit, as in “If I see him then maybe I'll talk to him”. If there is no explicit operator, the operator is assumed to be an implicit necessity operator. This means that a conditional of the form “If P then Q” is interpreted as “If P then necessarily Q”. A formalized version of this is written as below, where the box represents necessity. All this is with respect to the world we are in, represented by **w**, the assumptions we make about the world, represented by **f**, and an ordering of the world in order to see that things happens under normals circumstances, represented by **g**. I will go into more detail of this below.

$$[[\text{if } P \text{ then } \Box Q]]^{w,f,g} = [[\Box Q]]^{w,f+,g}$$

Example (25) would then be interpreted as “If I think of him, then it necessarily happens so that I shiver.”

⁴ This observation will be introduced in 4.3.

(25) If I think of him, I get shivers.

If we add “I think of him” to our stock of beliefs and the result always is “that I shiver”, then (25) is true. To determine if (25) is true, we need to know something about the world. We need to know if I shiver when I think of him. In Kratzerian semantics those facts are our *conversational background*. We draw our conclusions from the conversational background, and it can sometimes be explicitly referred to as “what we know” (Kratzer 1983:42-43). Kratzer uses possible world semantics, and conversational background is explained as:

What is known is different from one possible world to another. And what is known in a possible world is a set of propositions. In our semantics, a conversational background will therefore be construed as a function which assigns sets of propositions to possible worlds. (Kratzer 1983:43)

From this we can get another important concept, the *modal base*. The modal base is similar to our stock of assumptions. It is the modal base that we update in order to determine the truth of (25). The modal base is a function from possible worlds to propositions. It assigns to a world the propositions which are true in that world. It doesn't have to be all the propositions which are true in that world, it can also be a subset of those propositions. The variable **f** is used to represent the modal base. All possible worlds are **W**, and **w** is a subset of **W**. Applying the modal base to a world can be written **f(w)**. From the conversational background we can determine which worlds are accessible from it (Kratzer 1983:42).

To analyze (25) we also need to know about the *ordering source*, represented by **g**. The ordering source orders the worlds according to its degree of normalcy or idealism, for example. There can always be worlds where it doesn't follow that I shiver when I think of him. Therefore we need to order the worlds so that the optimal worlds are the ones where this is the case. To use an ordering source, we need to make the assumption that there are best worlds (Kratzer 1983:47). The ordering is based on the conversational background.

Now that we are familiar with Kratzer's terms, we can look at (25) again. (25) is true if and only if it is true in all the worlds where I think of him, with respect to a modal base **f(w)** (applied to the world) and a ordering source **g**, I shiver. The formalization is shown below, where **w** is the world of evaluation. The box represents necessity. **f+** stands for the modal base updated with the propositions in the antecedent, “I think of him”.

$$[[\text{if I think of him then } \Box \text{I shiver}]]^{w,f,g} = [[\Box \text{I shiver}]]^{w,f+,g}$$

A generalized version of this is shown below, applied to 'If P then necessarily Q'.

$$[[\text{if P then } \Box \text{Q}]]^{w,f,g} = [[\Box \text{Q}]]^{w,f+,g}$$

“If I think of him, I shiver” is true if and only if updating the modal base with the proposition that “I think of him” makes “I shiver” a necessity. In a generalized way, if updating the modal base with the facts we state in P makes Q a necessity, then “if P then Q” is true. This is with respect to the ordering source, which sees to it that things occur under normal or ideal circumstances, and a world of evaluation.

3. Method

To determine if we can have a unified analysis we need to examine this hypothesis. The assumption that 'bara' signals the same thing regardless of reading predicts that there should be a way of applying the diagnostics from Lindahl (2014) so that they give a correct paraphrase independent of reading. There should be a way of choosing the focus and background so that this happens. I'll apply this idea when testing diagnostics and we'll see the result of this prediction the results section.

I will also examine if there is any constraint on where the focus in the sentence lies when looking at the at the different readings. This will be done by varying the emphasis and see what readings emerge.

To further study the behavior of minimal sufficiency readings I'll see if MSR's are restricted in their syntactic distribution. This will be done by applying diagnostics in various syntactic environments. The examples are mostly in Swedish, but English examples will also be used.

The new theory will be developed by studying previous theories of the different readings of 'only'-type worlds, taking into consideration new observations of the behavior of minimal sufficiency readings. The new theory will build upon ideas from Beaver and Clark (2009) and Coppock and Beaver (2013a, b). For the new analysis I will also be using Kratzerian semantics for modals.

We can see that this works with other examples as well. Paraphrase 1 below doesn't work. If we add happens as in paraphrase 2, it does work.

(27) If you just come here, I'll be happy.

Paraphrase 1: “The only thing that'll make me happy is if you come here.”

Paraphrase 2: “If the only thing that happens is that you come here, I'll be happy.”

It seems like 'bara' signals the same thing regardless of reading, if we use the diagnostic above.

Paraphrasing with “the only thing” can work with both exclusive and MSR, if we do it right. The fact that diagnostics can pick out both readings when they're supposed to pick out just one supports the claim that a unified analysis is possible.

4.2 Effects of changing the focus

We saw previously that 'bara' is a focus-sensitive word (see 2.2). When testing diagnostics above and in Lindahl 2014 it becomes apparent that focus plays a role when distinguishing the two readings.

The contrast between focus can be seen in if we compare the focus in (27) and (28).

(27) If she only eats vegan food, then we'll have to buy something else.

(28) If she just ate vegan food, we wouldn't have to buy something else.

Example (27) only has an exclusive reading, which can be shown by applying the “the only thing”-diagnostic. The focus of the sentence is “vegan food”. This is a narrow focus.

Paraphrase: If the only thing she eats is vegan food, then we'll have to buy something else.

We can show that it doesn't have an MSR by applying the “is sufficient to” - diagnostic. The paraphrase and the original sentence are not equal.

Paraphrase: “If she eats vegan food it is sufficient for us to buy something else.”

If we look at (28) the focus is the whole antecedent; “If she just ate vegan food”. This is a broad focus. Here, an MSR is possible.

Paraphrase: “Her eating vegan food is sufficient for us not having to buy something else.”

It seems as though MSR's need broad focus to occur. (29) is another example of this.⁵

(29a) If you just see him, you should go home.

(29b) If he just went HIM, you should go home.

In (29a), the focus is on the whole antecedent and an MSR is the most prominent reading. A paraphrase confirms that (29a) has an MSR.

Paraphrase: “If you see him it is sufficient for you to ought to go home.”

If we look at (29b) the focus is on 'HIM'. A paraphrase with “the only thing” works. (29b) has an exclusive reading. The focus on 'him' is a narrow focus. A paraphrase with “is sufficient to” doesn't work in this case.

Paraphrase: “If the only person you see is him, then you ought to go home”

In the previous section we saw that if we changed the focus to the whole antecedent, then we could get a MSR from an exclusive-diagnostic. This also supports the fact that MSR need broad focus and it explains why one feels inclined to add “happens”. If the whole antecedent is the focus, then naturally the CQ will be “What happens?”.

4.3 Causal environment

Minimal sufficiency readings seem to only be available in causal environments. MSR's occur when 'bara' is in the antecedent of a conditional as in (30) or is the subject of a causative verbs as in (31). A paraphrase of (30) with “is sufficient to” gives us the sentence “Doing your homework is

⁵ It seems as if negating the consequent forces the reading to become exclusive. See A and B.

(A) If you just talk to him, you'll feel better.

(B) If you just talk to him, you won't feel better.

Both readings are available in (A). The MSR would be “Talking to him is sufficient for you to feel better.” and the exclusive could be “If the only thing you do is talk to him, you'll feel better.” (As opposed to talking to him and hug him, for example.)

But what would an MSR of (B) be? The exclusive can be paraphrased “If the only thing you do is talk to him, you won't feel better.”

A paraphrase with the MSR diagnostic would be “If you talk to him it is sufficient for you not to feel better.”

This is a point for further research.

sufficient to get you dessert”. This shows us that it is an MSR.

(30) Om du bara gör dina läxor så får du efterrätt.

'If you just do your homework you'll have dessert.'

(31) Bara tanken på honom får mig att rysa.

'Just the the thought of him makes me shiver.'

According to Rosenkvist (2004:172) the Swedish 'bara' has a use as a conditional subordinator. This in itself is not a new observation. But according to Rosenkvist, 'bara' as a conditional subordinator has two sub-meanings. Both of these sub-meanings would be analyzed as minimal sufficiency readings, according to the previous theories of MSRs. All other occurrences of 'bara' that are not conditional subordinators are said to be exclusives according to Rosenkvist. This gives us an incentive to look at minimal sufficiency readings in conditionals, and it also supports the assumption that minimal sufficiency readings only occur in causal environments.

(32) is an example of 'bara' as a conditional subordinator.

(32) Bara mamma kommer så kan du gå hem.

'If only mum comes, then you can go home.'

Paraphrase: Det räcker med att mamma kommer, så kan du gå hem.

'It is sufficient that mom comes, then you can go home.'

Example (32) is has an MSR. However, if we remove the consequent as in (33), the exclusive reading becomes the prominent reading. To get a minimal sufficiency reading from (33) there has to be a consequent, even though it could be implicit as in (34). Without it (33) is not in a causal environment and an MSR can't occur.

(33) Bara mamma kommer.

'Only mum comes.'

(34) Kan du städa ditt rum?

'Could you clean your room?'

Bara mamma kommer... (så ska jag göra det.)

'Only mum comes..... (then I'll do it)

If we look at simple sentences containing 'bara' we can see that MSR doesn't occur when modifying the object of transitive verbs, as in (35).

(35) Jag har bara två katter.

'I only have two cats.'

It's hard to imagine how a MSR would look like in this case. How could it describe a minimal level? A paraphrase with "is sufficient to" does not make sense either. This is in line with the previous observation that MSRs need broad focus. The focus in (35) is on two and is narrow.

'Bara' can however give rise to MSR when it modifies a transitive verb, as long as it is in a causal environment. Contrast (36) with (37).

(36) Klarar hon bara provet så klarar hon kursen.

Passes she just the.test. then passes she the.course.

'If she just passes the test then she'll pass the course'.

(37) Hon klarade bara provet.

'She only passed the test'.

In (36), the MSR is the most prominent reading, but in (37) a MSR is not available. This becomes obvious when we paraphrase (37) with the "BACKGROUND is sufficient to FOCUS" - diagnostics. The focus is on the test and the background is 'she passed'.

Paraphrase: Hon klarade räcker för provet. ??

'She passed is sufficient to the test.' ??

Minimal sufficiency readings can also arise with other lexical items, such as in (38).

(38) Ifall jag ser nåt mer än en skymt av rött, så känner jag mig oren.

If I see something more than a hint of red then feel I me unclean

'If I see no more than a hint of redness, I feel unclean.'

As we can see, all the occurrences of MSRs of 'bara' are in causal environments, and from on I will make the assumption that minimal sufficiency readings only occur in causal environments.⁶

⁶ An example such as (C) could seem like an counter-example to our observations, what reading does it have? Is it an exclusive or a minimal sufficiency reading?

(C) Just the dinner came to 40 dollars.

If it is a minimal sufficiency reading it would be a counter-example to the assumption that MSRs only occur in causal environments. This doesn't have to be a problem though. I don't believe that this is a minimal sufficiency reading, and it certainly isn't if one uses the diagnostic where MSRs is paraphrased with "is sufficient to". And it is not an exclusive reading either. But, the new theory presented in this paper doesn't say that everything that isn't a minimal sufficiency reading has to be the exclusive reading. What is going on here is an excellent point for further research.

5. Discussion

5.1 Critique of previous theories

As we've now seen, a new theory need to be able to account for all these new observations. We've seen that it's possible for a diagnostic that's supposed to pick out the exclusive reading to pick out an MSR. This goes against Grosz's (2009) idea of two separate lexical items. It seems as though two lexical items is unnecessary and not empirically preferred. Coppock and Beaver (2013a,b) argue in favor of a unified analysis, so this observation supports their theory.

The fact that MSRs in conditionals need broad sentential focus is something that is missing from both Grosz's and Coppock and Beaver's analyses. Grosz does claim that MSR and exclusive readings can occur under broad focus but he doesn't account for why it is so. Coppock and Beaver do not look at MSRs in conditionals and therefore have nothing to say about focus in these cases.

Neither of the previous theories has much to say about the relationship between the occurrence of MSRs and causal environments. Coppock and Beaver looks at some examples in causal environments but their theory doesn't predict the contrast between causal and non-causal environments. As previously mentioned, Grosz do use MSRs in conditionals in his analysis but he doesn't predict the contrast either. He also doesn't look at other examples in causal environments such as “Just the thought of him sends shivers down my spine”. Neither Coppock and Beaver nor Grosz account for the occurrence of MSRs in other exclusives.

Grosz uses a “which is not a lot”-paraphrase when trying to make the MSRs explicit. This comes from an implicature he claims that MSRs has. Coppock and Beaver don't account for this implicature.

In short, a new theory should be able to explain the role of focus in MSRs. It should be able to account for why the reading can differ with the shift of focus and it should also be able to explain why MSRs can occur with other lexical items. It should also give us a way of analyzing MSRs in conditionals.

5.2 Analysis

The idea behind this paper is that 'bara' works in the same way regardless of reading. The question is then; what is it that makes the difference between them? How can we analyze these differences?

In the new theory presented below it is suggested that the current question is what determines the reading. This idea is also adopted from the previous theories by Beaver and Clark (2009) and Coppock and Beaver (2013a,b). Following Beaver and Clark (2009) and Coppock and Beaver (2013a,b) I also assume that both the exclusive and the minimal sufficiency reading have a *no more than/nothing more than* – component and *at least*-component.

Let us consider (39).

(39) Om han bara tränade lite, så skulle han bli snygg.

'If he just worked out a little, he'd be hot.'

Depending on the reading, (39) can have either of the implicature below.

(39a) → Exclusive = If he works out more than a little, he wouldn't be hot.

(39b) → MSR = If he works out more than a little, he will still be hot.

The proposal here is that 'bara' and other 'only'-type words work in the same way no matter the reading. Both readings have a negative and a positive component and the difference between them lies in the current question. The answers to the CQ of a sentence is the focus of that sentence (Coppock & Beaver, 2013b:24). This relation between focus and CQ explains why the difference in focus gives different readings.

In (39), focus on *a little* results in an exclusive reading. This gives us the CQ for the exclusive reading in 39a; “How much does he work out?”. Focus on the whole antecedent in (39) results in an MSR and this gives us the CQ for the MSR; “What happens?”. What happens is that he works out a little.

The intuition behind this new analysis is that MSRs in the shape of “If just P then Q” the word 'bara' or 'only' signals that you ONLY need to add this little thing P for Q to follow. We've seen that changing the CQ to “What happens?” gives us broad focus and an MSR. The CQ of MSRs can be explained if you think about it like this: “What happens”? “Just P happens and Q necessarily

follows”.

From this intuition we turn to Kratzer (1983). If we adapt her concept of modal base, we can change the current question of a sentence with an MSR reading to be “What do we add to the modal base?”. Kratzer's modal base is the world as we know it and more informally the CQ is “What do we add to the world?”. The idea is that we only add P, and Q necessarily happens. But it's important to note that this doesn't mean that nothing else makes Q happen.

However, Kratzer's analysis of conditionals alone is not enough to account for the readings. We still need a negative and a positive component. I will use the MIN and MAX operators from Beaver and Clark (2009).

To get the (39b) reading from (39) it is analyzed as shown below. Let's start with a generalized version of the form “If just P, then Q”, rewritten “If just P, then necessarily Q”.

P is the set of assumptions in the antecedent. A is here the assumptions in the antecedent, as shown by $A = \{P\}$. A is what we add to the modal base. With respect to the world of evaluation, w , and an ordering source g , it is presupposed that we add at least A to the modal base, and it is asserted that we add at most A to the modal base. The CQ is “what do we add to the modal base?” and the context that gives us the CQ is represented by s . The formula below says that there exists an A such that it is at least P and at most P.

$$\lambda w \exists A = (\text{presupposed}(\text{MIN}(A=\{P\})(w))) \wedge (\text{MAX}(A=\{P\}))$$

The truth-conditions for “If just P, then necessarily Q” is formalized as below, where f^+ is the modal base updated with the assumptions in A.

$$[[\text{if just P then } \Box Q]]^{w,f,g,s} = [[\Box Q]]^{w,f^+,g,s}$$

“If just P, then necessarily Q” is true if and only if adding A to the modal base f makes Q a necessity, with respect to w , f , and g , the ordering source. A paraphrase of this would be “If we assume that we add at most A, and it is presupposed that we add at least A, the consequent Q follows as a necessity.”

If we look at our (39) example again, it is presupposed that we assume that he at least works out a

little (the MIN formula) and it is asserted that we assume at most that he works out a little (the MAX formula). MIN and MAX operate on the set of assumptions, on the whole of the antecedent. If we make these assumptions, adding them to the modal base, it follows that he would be hot.

This analysis gives us the right implications, since it doesn't rule out implication that he'd still be hot if we worked out more than a little. It also preserves the truth-vacuousness of the minimal sufficiency reading, that is, removing 'just' from the sentence wouldn't change the truth-value.

But how shall we treat (39) with the (39a) implicature? In this case, the CQ is “How much does he work out?” and the assumptions would be that he works out at least a little and at most a little.

presupposed (MIN(he works out a little(w)) \wedge (MAX(he works out a little))

We then add this to the modal base

f + (presupposed (MIN(he works out a little(w)) \wedge (MAX(he works out a little))

Both of these are of course with respect to a world of evaluation, **w**, an ordering source, **g** and context **s**.

The difference between the readings is that in the MSR, we add to the modal base *at most* the assumption that he works out a little. In the latter, the exclusive, we add that he *at most* works out a little. To get (39b) the MAX operator limits the amount of assumptions we add. In (39a) MAX limits the actual assumption, that he works out *no more* than a little. This comes from the CQ. In (39b) we ask what we add to the modal base; in (39a) we instead ask for how much he works out. Thus we get the right implicatures and the right truth-values.

In MSRs, the CQ is “What happens?”. The answers to the CQ is the focus of the sentence. In (39), the answer to “What happens?” is the whole antecedent, thus giving us broad focus. This explains why MSRs need broad focus to occur. In the exclusive reading of (39) it is the narrow focus on 'a little' which gives us this exclusive reading.

We have now seen that a unified theory is possible. Regardless of reading, the analysis works in the same way. The only difference is in the CQ. 'Bara' or other 'only'-type words can be said to always work in the same way. Something is always excluded, whether it is the actual things the exclusive excludes or the assumptions we add to the modal base, as with the case with minimal sufficiency

readings. This analysis explains minimal sufficiency readings in conditionals, however it should be able to extend to any kind of causal environment.

The analysis above can also explain the fact that minimal sufficiency readings can occur with other lexical items, since we have broken down the readings into MAX and MIN components which can also be applied to other lexical items. The new analysis can also show where Grosz's (2012:229) "which is not a lot" intuition in minimal sufficiency readings comes from. It is not a lot we add to the modal base. If we take (39) as an example; we ONLY add the assumption that he works out a little.

6. Conclusion

Can we have a unified analysis of 'bara' or 'only'? Yes, we can. As shown above, it is possible to analyze 'only'-type words, in this case 'bara', in the same way independent of reading. This is done by analyzing 'bara' as having a MIN and a MAX operator modifying the answers to the current question. The difference between the readings is what the current question is about. If we use Kratzerian semantics and her concept of the modal base, we can see that if the CQ is "What do we add to the modal base?", we get the correct implicatures and truth-value for MSRs.

This unified analysis is opposed to Grosz's analysis which uses two lexical items. Grosz cannot account for MSRs in conditionals and he also doesn't account for the need of broad focus that MSR has. A point of interest is that Grosz theory focus a lot on optatives, expressions used to express wish or desire (Grosz, 2012:5). A theory of modal base could very well suits the analysis of those and that would be an interesting point for further research.

Coppock and Beaver also argues in favor of a unified analysis. The analysis presented in this paper builds in parts on their analysis. But they do not analyze MSRs in conditionals, which this paper does. Coppock and Beavers theory also doesn't predict the relation between causal environments and MSRs.

The analysis in this paper explains how to analyze MSRs in conditionals, something which previous theories don't. I make the assumption that minimal sufficiency readings only occur in causal environments. The analysis should be able to extend to other causal environments, not only conditionals. The role of focus is explained by the fact that it answers the CQ, which in turn is what

the reading depends on. MSRs need broad focus, and this is because the answers to the CQ in MSRs are whole propositions. We can also apply this analysis to other lexical items, since the MAX and MIN operators can be applied to other lexical items.

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