A Semantic Analysis of Negative Islands with Manner Questions[*]

Márta Abrusán
Collegium Budapest/MIT

abrusan@alum.mit.edu

Abstract

Dayal (1996) has proposed that a question presupposes that it has a most informative true answer. In this paper I argue that the reason for the unacceptability of negative manner questions is that this requirement can never be met in the case of these questions. This is because the domain of manners contains atoms that are not independent from each other: contraries. Therefore the truth of an (atomic) proposition in the Hamblin denotation of such questions has consequences for the truth of other atomic propositions. This state of affairs in the case of negative questions results in a situation in which it is not possible to select a maximal answer.

1   Introduction

This paper proposes an explanation for the oddness of negative islands with manner predicates such as (1). This example stands in contrast with the one in (2), which shows that a *wh*-word ranging over individuals can escape negation without any problem.

(1)   *How didn't John behave at the party?

(2)   Who didn't John invite to the party?

I will argue that the reason for the unacceptability of (1) is that it cannot have a maximally informative true answer. Dayal (1996) has argued that a question presupposes that there is a single most informative true proposition in the Karttunen denotation of the question, i.e. a proposition that entails all the other true answers to the

---

---

question. In this paper I show that in the case of negative manner questions, Dayal (1996)'s presupposition can never be met. The intuitive idea as for why these questions are bad is very simple: the domain of manners contains contrary predicates, such as *fast*, *slow*, *medium speed*, etc. However, as the domain of manners is structured in such a way that the predicates themselves are in opposition with each other, in the case of negative questions it will turn out to be impossible to select any proposition in the denotation of manner questions as the most informative true proposition.

An account for negative islands however not only has to apply for the odd examples above: it is also necessary to explain why in some cases the above examples can be rescued. There are two such cases in the literature. The first case is the important empirical observation made in Fox and Hackl (2005) (partly building on work by Kuno and Takami (1997)) according to which universal modals above negation, or equivalently, existential modals under negation save negative degree questions:

(3)   How much radiation are we not allowed to expose our workers to?

(4)   How much are you sure that this vessel won't weigh?

This pattern was noted for negative degree questions, but in fact it seems to be a general property of negative islands: (5) provides an example of a negative question about manners.

(5)   How is John not allowed to behave at the party?

The second way to improve negative islands was discussed by Kroch (1989) who showed that examples like (1) become acceptable if the context specifies a list of options (cf. (6)).

(6)   How didn't John behave at the party: wisely or impolitely?

This paper is organised as follows: Section 2 discusses certain key properties of manner predicates, while Section 3 introduces the proposal for the unacceptability of negative manner questions as well as the obviation facts shown above. In Section 4 I discuss some other instances of unacceptable negative questions such as questions involving temporal and spacial modifiers in certain environments, which I will show can receive a similar treatment to that of negative manner questions. Finally in Section 5 I compare the present account with previous proposals.

2   About manner predicates

2.1   Pluralities of manners

I will assume that manner predicates denote a function from events (e) to truth-values (t), or equivalently a set of events:

(7) $[[fast]] = \{e \mid fast\ e\}$

Extending Landman (1989)'s version of Link (1983) to manner predicates, I will assume that we form plural manners as illustrated below:

(8) $[[fast+carelessly]] = \{\{e \mid fast\ e\}, \{e \mid careless\ e\}\}$

Given this way of forming plural manner predicates, we arrive at a structured domain, not unlike that of the domain of individuals (cf. Link (1983) and subsequent work.). Let's pause for a second and think about how a plural manner such as the one in (8) will be able to combine with a predicate of events. Since in this case we have sets of sets of events, predicate modification will not be able to apply in a simple fashion. Furthermore, if we look at an example such as the one below, we also want our semantics to predict that the running event in question was both fast and careless.

(9)   a.   John ran fast and carelessly
        b. $\lambda w. \exists e\ [run(w)(e)(John) \wedge fast+carelessly\ (w)(e)]$

To resolve this type conflict and to derive the appropriate meaning, we will postulate an operator D that applies to plural manner predicates, much in the fashion of the distributive operator commonly assumed for individuals:

(10) $D\ (P_{PL}) = \lambda e. \forall p \in P_{PL}\ p(e)$

Observe that talking about plural manners gives rise to all-or-nothing effects in the unmarked case.[1] However the formula in (11)c only means that there is no event of running by John that was both fast and careless.

(11)   a.   John didn't run fast and carelessly
        b.   'John run neither fast nor carelessly'
        c. $\lambda w. \neg\ \exists e\ [run(w)(e)(John) \wedge fast+carelessly\ (w)(e)]$

A similar effect has been famously observed in the case of predication over plural individuals (cf. e.g. Löbner (1985), Schwarzschild (1993), Beck (2001), Gajewski (2005)). The standard treatment of this effect is the postulation of a homogeneity presupposition on the distributive operator. Similarly, we will postulate a homogeneity presupposition on the D-operator introduced above:

---

[1]However, in some contexts it might be possible to understand such examples as if *and* was Boolean. To account for these cases we might say that *and* is in fact ambiguous between a Boolean and a plural-forming *and*. However, this will not change the reasoning because in the case of negative sentences the alternative that employs a Boolean *and* will not have a chance to be a maximally informative answer in any case. [thanks to Danny Fox (pc) for pointing this out to me.]

(12)   D $(P_{PL})=\lambda e$: $[\forall p \in P_{PL}\ p(e)]$ or $[\forall p \in P_{PL}\ \neg p(e)]$. $\forall p \in P_{PL}\ p(e)$.

Let's look at an example of a positive question about manners. The Hamblin-denotation of the question will contain a set of propositions such as (13)b-c. Given our assumption that the domain of manners contains both singular and plural manner predicates, the question word *how* will range over both singular and plural manner predicates as well. Notice that I will assume that a question such as (13) talks about a contextually given event, which I will represent here by (e*). In other words the question in (13) is interpreted as 'How was John's running?'.

(13)   a. How did John run?
        b. λp. $\exists q_{manner}$ $[p=\lambda w'$. run $(w')(e*)(John) \wedge q_{manner} (w')(e*)]$
        c. {that John ran fast, that John run fast+carelessly, etc..}

Given the D operator introduced above, the proposition that John run fast+carelessly will entail that John run fast and that John run carelessly. If this proposition is indeed the maximal true answer, we will conclude that John's running was performed in a fast and careless manner and in no other manner in particular.

2.2   Contraries and the ban on forming incoherent plural manners

The crucial assumption that I would like to introduce is that the domain of manners always contains contraries. The observation that predicates have contrary oppositions dates back to Aristotle's study of the square of opposition and the nature of logical relations. (cf. Horn (1989) for a historical survey and a comprehensive discussion of the distinction between contrary and contradictory oppositions, as well as Gajewski (2005) for a more recent discussion of the linguistic significance of contrariety). Contrariety is relation that holds between two statements that cannot be simultaneously true, though they may be simultaneously false. A special class of contraries are contradictories, which not only cannot be simultaneously true, but they cannot be simultaneously false either. Natural language negation is usually taken to yield contradictory statements (cf. e.g. Horn (1989)).

(14)   Two statements are contraries if they cannot be simultaneously true

(15)   Two statements are contradictories if they cannot be simultaneously true or false

A classic example of a pair of contrary statements is a universal statement and its inner negation (assuming that the universal quantifier comes with an existential presupposition) such as (16). Other examples of contrary statements include pairs of contrary predicates such as the sentences in (17) and (18):

(16)   a. Every man is mortal
        b. Every man is not mortal (=No man is mortal)

(17)   a.   John is short
       b.   John is tall

(18)   a.   John is wise
       b.   John is unwise

What distinguishes contrary predicates from contradictory predicates is that two contrary predicates may be simultaneously false: it is possible for an individual to be neither tall nor short, or neither wise nor unwise. This is also shown by the fact that the negation of predicates is usually not synonymous with their antonyms: the statement that *John is not sad* e.g. does not imply that he is happy.

Similarly to other predicates then, the domain of manners also contains contraries. In fact I will claim that every manner predicate has at least one contrary in the domain of manners (which is not a contradictory). Moreover, we will say that for any pair of a predicate P and a contrary of it, P', there is a middle-predicate P^M such that at least some of the events that are neither in P or P' are in P^M. (19) summarises these conditions on the domain of manners:

(19)   Manners denote functions from events to truth values. The set of manners (D_M) in a context C is a subset of $[\{f \mid E \rightarrow \{1,0\}\} = \wp(E)]$ that satisfies the following conditions:
       i.   for each predicate of manners $P \in D_M$, there is at least one contrary predicate of manners $P' \in D_M$, such that P and P' do not overlap: $P \cap P' = \varnothing$.
       ii. for each pair (P, P'), where P is a manner predicate and P' is a contrary of P, and $P \in D_M$ and $P' \in D_M$, there is a set of events $P^M \in D_M$, such that for every event *e* in $P^M \in D_M$ [$e \notin P \in D_M$ & $e \notin P' \in D_M$].

I will assume that the context might implicitly restrict the domain of manners, just as the domain of individuals, but for any member in the set {P, P', P^M}, the other two members are alternatives to it in any context. Some examples of such triplets are shown below:

(20)   a.   P: wisely; fast; by bus
       b.   P': unwisely; slowly; by car
       c. P^M: neither wisely nor unwisely; medium speed; neither by car or by bus

Given what we have said above it is somewhat surprising that the sentences below are odd: if the conjunction of two predicates is interpreted as forming a plural manner, and homogeneity applies, (21)a should mean that John ran neither fast nor slowly. Similarly, (21)b should simply mean that John's reply was neither wise nor unwise. We have just argued above that it is a property of contrary predicates that they might be simultaneously false. So why should the sentences in (21) be odd?

(21)   a.   #John did not run <u>fast and slowly</u>

b.   #John did not reply <u>wisely and unwisely</u>

I will say that it is the presupposition on forming plural manner predicates {p_1,p_2} that $p_1 \cap p_2 \neq 0$. It is then for this reason that the sentences in (21) are unacceptable: e.g. the plural manner {fast, slow} is a presupposition failure since it is not possible for a running event to be both fast and slow at the same time, and therefore the plural manner cannot be formed. This condition might be connected to a more general requirement that a plurality should be possible. Spector (2007) e.g. claims that plural indefinites induce a modal presupposition that requires that their plural reading be possible. Somewhat similarly, Szabolcsi and Haddican (2004) conclude that conjunctions, especially negated ones with homogeneity, have an "expected both" presupposition. It seems then that our presupposition that gives the restriction on forming incoherent plural manners might be part of a more general requirement on forming pluralities.

To sum up, in this section we have introduced a couple of assumptions about manner predicates that all seem to be motivated independently. Manner predicates have contraries, plus there is a predicate that denotes a set of events that belong to neither p nor its contrary. These three predicates are alternatives to each other in any context. The final assumption was that it is impossible to form incoherent plural predicates, which seemed to be again a general property of forming pluralities.

3   The proposal: Negative islands with manner questions

We finally have everything in place to spell out the account of negative manner questions. We will say that the reason for the ungrammaticality of questions like (1), in contrast to (2) is that there cannot be a maximally informative true answer to a negative question about manners. Why? The reason is rooted in the fact that the domain of manners contains contraries. Let's see how.

3.1   Positive and negative manner questions

Let's look first at positive questions about manners. As I have suggested above, in any given context, the domain of manners might be restricted, but for any predicate of events p, its contrary p' and the middle-predicate p^M will be among the alternatives in the Hamblin set. Suppose that the context restricts the domain of manners to the dimension of wisdom. Now the Hamblin-denotation of (22) will contain at least the propositions in (22)b:

(22)   a: How did John behave?
        b.   {that John behaved wisely, that John behaved unwisely,
             that John behaved neither wisely nor unwisely}

Suppose now that John indeed behaved wisely. Given that the three alternatives are exclusive (as contraries cannot be simultaneously true), if the Hamblin set contains only these three propositions, no other proposition will be true. In other words, the event in

question (e*) is an element of the set of events denoted by *wisely*, and not an element of any other set. This is graphically represented below:

(23)   __e*____   _____   _____
            wise   med-wise   unwise

Since in this case this is the only true proposition, this will at the same time be the most informative true answer as well. Note that if we had more propositions in the Hamblin set, e.g. *wisely*, *politely*, and their contraries respectively, as well as the plural manners that can be formed from these, the situation would be similar to questions that range over both singular and plural individuals. Suppose that John in fact behaved *wisely* and *politely*: given the distributive interpretation of plural predicates introduced above, this will entail that he behaved wisely and that he behaved politely, and imply that he did not behave in any other manner, i.e. he did not behave unwisely, impolitely, etc.

　　　Let's look now at a negative question. First imagine, that our context restricts the domain to the dimension of wiseness.

(24)   a: *How didn't John behave?
        b. λp. $\exists$q$_{manner}$ [p=λw'.behave (w')(e*)(John) $\wedge \neg$ q$_{manner}$ (w')(e*)]
        c.   {that John did not behave wisely, that John did not behave unwisely,
             that John did not behave neither wisely nor unwisely}

Suppose that *John did not behave wisely* was the most informative true answer. This would mean that the only set of events among our alternatives which does not contain the event in question (e*) is the set of wise events. But this means that the event in question is both a member of the set of events denoted by *unwisely*, and the set of events denoted by *neither wisely not unwisely (in short: med-wisely).* This situation is graphically represented below:

(25)   a.   John did not behave wisely
        b.   _____   ____e*____   ___e*_____
             wisely   med-wisely   unwisely
             →this cannot be true because of ((19) ii)

Yet, this cannot be true, because these two sets are exclusive by definition, and no event can be a member of both of them. Therefore (25) cannot be the most informative true answer to (24). What about an answer such as (26) below?

(26)   a.   #John did not behave wisely and unwisely
        b.   _____   ___e*_____   _____
             wise   med-wise   unwise

This answer is ruled out by the presupposition that excludes the formation of incoherent plural manners. The predicates *wisely* and *unwisely* are contraries, and therefore they cannot form a plural manner. (As mentioned above, this is also the reason why the

sentence itself in (26) is odd.) Therefore the proposition that John did not behave wisely and unwisely is not in the set of alternatives. For this reason (26) cannot be the most informative true answer. But now we have run out of options, if neither (25) nor (26) can be a maximal answer, there is no maximal answer. It is easy to see that if we had more alternatives, e.g. the alternatives based on wiseness and politeness, (i.e. *wisely*, *med-wisely*, *unwisely*, *politely*, *impolitely*, *med-politely* and the acceptable pluralities that can be formed based on these) the situation would be similar: Any answer that contains only one member of each triplet leads to contradiction, and any answer that contains more than one member of each triplet is a presupposition failure. There is no way out, no maximal answer can be given. Notice also that in the case of questions about individuals a similar problem does not arise and therefore there is no obstacle for there being a maximal answer to these questions. For this reason, we predict the question in (2) to be acceptable.

It should be noted that given the similarity of selecting a maximal answer to definite descriptions, the above account predicts that definite descriptions such as (27) should be also unacceptable:

(27)   #the way in which John didn't behave.

This prediction is indeed borne out. The reason is of course that there is no maximum among the various manners in which John did not behave.

3.2   Blindness

One might wonder why it is that the examples below do not make the negative manner questions grammatical[2]:

(28)   A: *How didn't John behave?
        B: Politely, e.g.
        B' Not politely.

(29)   *Bill was surprised how John didn't behave.

In other words, there are contexts by which a non-complete or mention-some answer can be forced, suggested or at least made possible. The marker *e.g.* explicitly signals that the answer is non-complete (cf. e.g. Beck and Rullmann (1999) on discussion), and as such the answer in (28)B should be contradiction-free. If so, we might expect that the existence of this answer should make the question itself grammatical. Negative term answers as (28)B' are usually also not interpreted as complete answers, as can be seen

---

[2](28)B was pointed out to me by Irene Heim and David Pesetsky (pc.), while (28)B' and (29) were brought to my attention by Emmanuel Chemla (pc.).

in exchanges such as *Who came*? *Not John.* [3] Finally, some verbs that embed questions with their weak meaning, such as *surprise* or *predict* might in fact be true under a "very weak" meaning*:* one might be surprised by who came, if one expected only a subset of the people among those who came to come. (cf. Lahiri (1991), Lahiri (2002)). In these cases too, we might expect the sentences to improve, contrary to fact.[4] Why is it that these instances of partial answers do not make negative manner questions good? In other words, since grammar also allows for weaker than strongly exhaustive readings, why can the hearer not recalibrate the condition on maximal answers into a weaker requirement, that of giving a partial answer?

I would like to argue that this apparent problem is in fact part of larger issue of the impenetrability of the linguistic system for non-linguistic reasoning, or reasoning based on common knowledge. As the requirement of the linguistic system is that there be a most informative true answer to the question, in the rare cases where this leads to a contradiction, we cannot access and recalibrate the rules for the felicity conditions on a question. Similar conclusions about the modularity of the various aspects of the linguistic systems were reached by Fox (2000) and Fox and Hackl (2005) about the nature of the Deductive System (DS) that he proposes, as well as in the above discussed Gajewski (2002). Similarly, Magri (2006) and subsequent work argues based on various examples that implicature computation should be blind to common knowledge. I contend then that the above observed impossibility of scaling down on our requirements based on contextual knowledge is part of a larger pattern of phenomena, where such adjustments to the core principles seem to be unavailable.

3.3   Ways to rescue Negative Islands

It was already mentioned briefly that explicit context restriction can rescue negative manner questions, as first observed by Kroch (1989). A second way to save negative island violations has been discovered by Fox and Hackl (2005) (partly based on Kuno and Takami (1997)): negative islands become perfectly acceptable if an existential modal appears under negation. This section shows that both of these facts are predicted by the present account in a straightforward manner.

3.3.1 Modals
Fox and Hackl (2005) (partly based on observations by Kuno and Takami (1997)) have noted that certain modals can save negative island violations: more precisely negative islands can be saved by inserting existential modals below negation or by inserting universal modals above negation:

---

[3]Although von Stechow and Zimmermann (1984) report somewhat different judgements from mine and Spector (2003). On the other hand, if a negative term answer were to be interpreted exhaustively, then if we only have three alternatives: {*politely*, *impolitely*, *mid-politely*} we should infer from the answer in (28)B' that John behaved politely, and in no other way, which is not a contradiction in itself.

[4]The examples with *predict* seem better, however on should be cautious: Given that *predict* selects for future tense, these examples are in fact parallel to the cases with modals, discussed in the next section. Their acceptability therefore should get the same explanation as that of the modals.

(30)   How is John not allowed to behave?

(31)   How did John certainly not behave?

The reason why these are predicted to be good in our system is that the contrary alternatives that are required to be true by exhaustive interpretation of the complete answer can be distributed over different possible worlds, hence the contradiction can be avoided: Notice that unlike before, we are not talking about a specific event any more, but the event is existentially quantified over. The existential quantification is presumably provided by the existential modal.

(32) $[[\text{How is John not allowed to behave?}]]^w$
        $=\lambda p.\ \exists q_{manner}\ [p=\lambda w'.\neg\exists w''_{Acc(w',w'')}.\exists e[behave(w'')(e)(John) \wedge q_{manner}\ (w'')(e)]]$

Imagine again a scenario, in which we have restricted the domain to the dimension of politeness. As before, the set of alternatives will at least include three contrary predicates: *politely*, *impolitely* and *neither politely nor impolitely* (represented below as med-politely)

(33)   a.   John is not allowed to behave impolitely.
        b.   __◊∃e____   ____◊∃e____   ____¬◊∃e___
             politely   med-politely   impolitely

There is no obstacle in this case for choosing a most informative answer, e.g. (33) above. This is because it might be the case that *impolitely* is indeed the only manner in which John is not allowed to behave, and in every other manners he is allowed to behave. In other words, it is allowed that there be an event of John behaving in a polite manner, and that there be another event of John behaving in a med-polite manner. The contradiction is resolved by distributing predicates over different worlds and events. Since universal modals above negation are equivalent to existential modals below negation, the same reasoning holds for (31) as well. On the other hand we predict manner questions where universal modals can be found under negation to be unacceptable. This is because in this case, instead of distributing the mutually exclusive propositions over different worlds, we require them to be true in every possible world, which of course is impossible. (Notice that assuming as before that the universal modal quantifies over worlds and events, the event variable is now universally quantified over.)

(34)   *How is John not required to behave?

(35) $[[\text{How is John not required to behave?}]]^w$
        $=\lambda p.\exists q_{manner}\ [p=\lambda w'.\neg\forall w''_{Acc(w',w'')}\ \forall e\ [behave\ (w'')(e)(John) \wedge q_{manner}\ (w'')(e)]]$

Why is the sentence in (36) below unacceptable as a maximal answer?

(36)   a.   #John is not required to behave impolitely.

     b.   __□∀e____   ____□∀e____   ____¬□∀e___
        politely   med-politely   impolitely

The problem is that if *impolitely* is the unique manner such that John is not required to behave that way, then for the other two alternatives it must be the case that John is required to behave in that manner: However, this is again a contradiction as these manner predicates are exclusive. Furthermore, just as we have seen before in the case of non-modal negative manners, it is not possible to form incoherent plural manners, therefore an answer such as #*John is not required to behave politely and impolitely* will not be possible either.

3.3.2   Explicit domains

If we restrict the set of possible answers in appropriate ways, we might get rid of the contradictions that cause problems. An example of this effect might be if we simply list the potential alternatives. The relevant observation goes back to Kroch (1989):

(37)   How did you not behave: A-nicely, B-politely, C-kindly?

In this case the set of alternatives is restricted to the non-plural manners A,B,C, (and potentially the sets that can be formed of these, depending on the rules of the multiple choice test). As this set does not have to contain any contraries, the difficulties that lead to weak island violation does not arise here, and hence the sentence is predicted to be good. In fact we also predict that if the list contained three predicates of manners that are mutually contraries to each other, the question should still be bad. I think that this prediction is indeed borne out:

(38)   *How do you not speak French?   A: very well   B: so-so   C: badly

The problem is that on the one hand a complete answer such as I do not speak French [α+β] violates the presupposition against forming incoherent manner predicates, but the complete answer I speak French α leads to a contradiction.

4   Negative island-like phenomena based on the same logic

As the examples below show, we observe marked ungrammaticality with final punctual eventive verbs (e.g. *die*), but not with statives (e.g. *be happy*).

(39)   *When did Mary not die?

(40)   When didn't you feel happy?

It also seems that there is a scale of acceptability judgements in between these two extremes. These facts can be explained by the same logic as we have seen above: given

that dying is a point-like event, there are infinite points in time (or intervals) such that it is true that Mary did not die at these times. However, these propositions are not ordered by entailment and therefore there is no maximally informative alternative among these true propositions. With statives on the other hand, it is possible to construct a scenario such that there is one maximal interval at which you did not feel happy.

A very similar pattern can be seen with questions formed by *where*. The example in (41) is deviant because it is not possible given the normal laws of our world to be at more than one place at the same time: yet this is exactly what a maximal answer to this question would require.

(41)   *Where aren't you at the moment?

(42)   Where hasn't Bill looked for the keys?

5   Summary and comparison with previous accounts

The most influential approach to negative islands has been the family of syntactic accounts. Rizzi (1990) (partly building on Obenauer (1984)) proposed that movement can be blocked by items that are sufficiently similar to the moved item. This is in fact the central idea of 'Relativised Minimality'. In the case of negative islands this idea is manifested by the fact that negative elements are A-bar specifiers, and therefore they are interveners for the movement of the like A-bar *wh*-phrases. (cf. also Cinque (1990), Comorovski (1989), Kroch (1989) for refinements, as well as its various later implementations in Chomsky (1995), Manzini (1998), Starke (2001) among others). However, in connection with negative islands it has been pointed out in the literature that while negation can be cross-linguistically expressed as a head or a specifier or an adjunct, yet the island-creating behavior of negation does not vary cross-linguistically. (cf. Szabolcsi (2006)) Second, it was also pointed out that while the theory claims to be syntactic, yet the characterization of the good vs. bad extractees seems to be semantic in nature (cf. Szabolcsi and Zwarts (1993), Honcoop (1998), Rullmann (1995)). To these well-known complaints we might add the problem of modal obviation discussed above. It is highly unlikely that a syntactic account could be extended to explain these facts: if negation is an A-bar intervener, the addition of a modal should not be able to change this fact.

The most important semantic alternative to these syntactic accounts has been proposed in Szabolcsi and Zwarts (1993). They attempt at drawing a principled demarcation line between the scopal expressions that create intervention, and those that do not. According to their theory, each scopal element is associated with certain Boolean operations. This claim should be understood that each scopal element in conjunction with a distributive verbal predicate can be interpreted as a Boolean combination of singular predications. Negation corresponds to taking Boolean complement. For a *wh*-phrase to take scope over a scopal element means that the operations associated with the scopal element need to be performed in the *wh*-phrase's denotation domain. However, if

the *wh*-phrase denotes in a domain for which the requisite operation is not defined, it cannot scope over a scopal element. E.g. a question such as *Who does John like?* has part of its denotation {a: <j,a> ∈ [[love]]}. As this is a set of individuals, it has a complement, and therefore the negative question is grammatical. In other words, in this theory sets of individuals serve as denotations for predicates, if the argument slot abstracted over is filled by an atomic individual. Manner predicates however are argued to be collective and therefore they do not have a component {α: j behaved in α}. Instead, they have what one might write as ια [j behaved in α], and the question asks which (collective) manner is identical to this unique individual (sum). That is why manner questions are bad: one cannot complement an i-sum. Thus Szabolcsi and Zwarts (1993)'s proposal is based on the interesting idea that the difference between the good and the bad extractees is to be found in their domain. This idea is shared by the present proposal a well, albeit in a rather different form. However, Szabolcsi and Zwarts (1993) do not offer very strong arguments as for why manners have to be collective. Further, similarly to the syntactic accounts, Szabolcsi and Zwarts (1993)'s theory does not explain the modal obviation effects discovered by Fox and Hackl (2005)[5].

In this paper I have argued that the felicity condition on asking a question according to which the speaker should be able to assume that the hearer might be able to know the most informative answer can never be met in the case of negative manner questions. This was because the domain of manners contained atoms that were not independent form each other: contraries. Therefore a truth of an (atomic) proposition in the Hamblin denotation of such questions had consequences for the truth of other atomic propositions. This state of affairs in the case of negative questions resulted in a situation in which it was not possible to select a maximal answer. The reasoning proposed in this paper is similar in spirit to the one employed in Fox and Hackl (2005) for negative degree questions: they also argue that the maximality condition that Dayal (1996) proposes is never met in the case of negative degree questions. Extending the account offered in Fox and Hackl (2005), Fox (2007) proposes that the following generalisation holds for sets of propositions that cannot have a maximal element:

(43)   Fox (2007)'s generalisation
        Let p be a proposition and A a set of propositions. p is *non-exhaustifiable given A:* [NE (p)(A)] if the denial of all alternatives in A that are not entailed by p is inconsistent with p.
        (i) $[NE(p)(A)] \Leftrightarrow p \& \cap\{\neg q : q \in A \& \neg(p \Rightarrow q)\} = \varnothing$.
        $$\Leftrightarrow \forall w MAx_{inf}(A)(w) \neq p$$

He proves that obviation by a universal, but not by existential quantification is a trivial logical property of such sets: The generalisation about the NE sets of propositions subsumes the cases of manner islands discussed here. Thus the observed pattern of modal obviation has a principled explanation in our system based on Fox (2007).

---

[5]Though Anna Szabolcsi (pc.) suggests that an account similar to the one given in this paper, based on multiple events, could be adopted to their account as well.

However, one question one might ask, whether there is a more restrictive generalisation than that offered by Fox (2007). Abrusan (2007) argues that indeed a more restrictive generalisation, stated below, can subsume both the cases of negative manner and degree islands.

(44)   Let p be a proposition and A a set of propositions. For any p, there are at least 2 alternatives in A such that each of them can be denied consistently with p, but the denial of both of these alternatives is inconsistent with p.

Let's observe how the above generalisation is manifested in the proposal of negative manner questions argued for in this paper. Recall the basic case of a negative manner question. Let's assume for the sake of simplicity that that the context restricts the domain to the dimension of politeness:

(45)   a.   *How didn't John behave?
        b. $\lambda p.\ \exists q_{manner}\ [p=\lambda w'.\ behave\ (w')(e^*)(John) \wedge \neg\ q_{manner}\ (w')(e^*)]$
        c.   {that John did not behave wisely, that John did not behave unwisely, that John did not behave neither wisely nor unwisely}

We can see that each alternative to any proposition p in the Hamblin denotation can be denied consistently with p. However the denial of any two alternatives at the same time leads to a contradiction.

Finally, let me address the question as to why the contradiction that we derive in the case of negative manner questions leads to ungrammaticality, as opposed to simple semantic oddness. Gajewski (2002) has proposed that we need to distinguish between analyticity that results from the logical constants alone, from analyticity that is the result of the non-logical vocabulary. He argues that sentences that express a contradiction or tautology solely by virtue of their logical constants (L-analytical sentences, in his terminology) are ungrammatical. A complete answer (i.e. the maximal answer q together with the negation of every alternative in the question's denotation not entailed by q) to negative manner questions is always L-analytical. This is because for any predicate of manners p, the set of alternatives will always contain its contrary manner p' as well as a third manner predicate p^M that expresses that the event was neither p nor p'. This will have the consequence that the set of propositions that the complete answer to a negative manner question requires to be true is always incoherent. Thus complete answers to a negative manner question are L-analytic, and hence, predicted to be ungrammatical by Gajewski (2002)'s condition.

References

Abrusan, M. (2007) *Contradiction and Grammar: The Case of Weak Islands*, Doctoral dissertation, Massachusetts Institute of Technology.

Beck, S., and H. Rullmann (1999) "A Flexible Approach to Exhaustivity in Questions", *Natural Language Semantics* **7**, 249–298.

Beck, S. (2001) "Reciprocals are Definites", *Natural Language Semantics* **9**, 69–138.

Chomsky, N. (1995) *The Minimalist Program*, Cambridge, Mass: MIT Press.

Cinque, G. (1990) *Types of A-dependencies*, Cambridge, Mass: MIT Press.

Comorovski, I. (1989) *Discourse and the Syntax of Multiple Constituent Questions*, Doctoral dissertation, Cornell University.

Dayal, V. (1996) *Locality in WH quantification*, Boston: Kluwer Academic Publishers.

Fox, D. (2000) *Economy and Semantic Interpretation*, Cambridge, Mass: MIT Press.

Fox, D., and M. Hackl. (2005) "The Universal Density of Measurement", *manuscript*, MIT and Pomona College.

Fox, D. (2007). "Too many alternatives: density, symmetry and other predicaments", *Proceedings of SALT XVII, ,* Ithaca*:* CLC Publications, Cornell University

Gajewski, J. (2002) "L-Analyticity in Natural Language", *manuscript*: MIT.

Gajewski, J. (2005) *Neg-raising: polarity and presupposition*, Doctoral Dissertation, Massachusetts Institute of Technology.

Honcoop, M. (1998) *Dynamic Excursions on Weak Islands*, Holland Academic Graphics.

Horn, L. (1989) *A natural history of negation*, Chicago: University of Chicago Press.

Kroch, A. (1989) "Amount quantification, referentiality, and long wh-movement", *manuscript,* University of Pennsylvania.

Kuno, S., and K. Takami (1997) "Remarks on negative islands", *Linguistic Inquiry* **28**, 553–576.

Lahiri, U. (1991) *Embedded Questions and Predicates that Embed Them*, PhD Dissertation, Massachusetts Institute of Technology.

Lahiri, U. (2002) *Questions and Answers in Embedded Contexts*, Oxford: Oxford University Press.

Landman, F. (1989) "Groups, I", *Linguistics and Philosophy* **12**, 559−605.

Link, G. (1983) "The logical analysis of plurals and mass terms: A lattice-theoretical approach", *Meaning, Use and Interpretation of Language* **21,** 302–323.

Löbner, S. (1985) "Definites", *Journal of Semantics* **4**, 279–326.

Magri, G. (2006). "The Blindness Hypothesis and Individual Level Predicates", *Proceedings of SALT XVI,* Ithaca*:* CLC Publications, Cornell University.

Manzini, R. (1998) "A minimalist theory of weak islands", *Syntax and Semantics* **29**, 185−209.

Obenauer, H. (1984) "On the Identification of Empty Categories", *The Linguistic Review* **4**, 153−202.

Rizzi, L. (1990) *Relativized Minimality*, Cambridge, Mass: MIT Press.

Rullmann, H. (1995) *Maximality in the semantics of wh-constructions*, Ph.D. Dissertation, University of Massachusetts at Amherst.

Spector, B. (2007) "Aspects of the Pragmatics of Plural Morphology: On Higher-order Implicatures", *manuscript,* Harvard Society of Fellows.

Starke, M. (2001) *Move Dissolves into Merge: a Theory of Locality*, Doctoral dissertation, University of Geneva.

Szabolcsi, A., and F. Zwarts. (1993) "Weak islands and an algebraic semantics for scope taking", *Natural Language Semantics* **1**: 235−284.

Szabolcsi, A. (2006). "Strong vs. weak islands", *The Blackwell Companion to Syntax* **4**: 479–531.