How to donkey FC- and NPI-*any**

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Abstract

Free Choice *any* and Negative Polarity Item *any* are uniformly analyzed as counterfactual donkey sentences (in disguise). Their difference in meaning will be reduced to the distinction between *strong* and *weak* readings of donkey sentences. It is shown that this explains the *universal* and *existential* character of FC- and NPI-*any*, respectively, and the positive and negative contexts in which they are licensed.

1 Introduction

The word 'any' is one of the most discussed items in theories of natural language form and interpretation. What does the word mean, and why can it be used appropriately, or even grammatically, only in a very limited set of grammatical contexts where one would expect it to occur? Even more challenging, perhaps, is the question whether we can give a 'uniform' enough analysis of N(egative) P(olarity) I(tem) *any* and F(ree) C(hoice) *any* that can account for their difference in meaning, but still explains why these different meanings are expressed (at least in English) by the same word. In this paper I will argue in favor of an analysis of both uses of *any* as counterfactual donkey sentences (in disguise). Their sole difference will be reduced to the distinction between *strong* and *weak* readings of donkey sentences. I will show that this explains the *universal* and *existential* character of FC- and NPI-*any*, respectively, and the positive and negative contexts in which they are licensed.

This paper is organized as follows: In section 2, I will motivate and explain Kadmon & Landman's (1993) widening and strengthening analysis of *any*. In section

*The research of this work is financially supported by the NWO project 'The Economics of Language', which is gratefully acknowledged.

3 I will explain my analysis of (strong readings of) counterfactual donkey sentences proposed in Van Rooij (to appear), and in section 4 I will analyze Free Choice *any* in terms of it. Section 5 will deal with NPI-*any*. It will be shown that if we treat this item as a weak counterfactual donkey sentence, the meaning of NPI-*any* will turn out to be equivalent to a standard indefinite, but one that can be used appropriately (via KŁ's licensing conditions) only in negative contexts. I conclude with section 6.

2 The widening analysis of *any*

Ladusaw (1979) proposed a very successful *semantic* characterization of the contexts in which *any* can be used appropriately: as far as *any* is a negative polarity item it can be used appropriately, or is *licensed*, only in *downward entailing* contexts. Context $X - Y$ is downward entailing (DE) iff from the truth of $X\alpha Y$ and the fact that $[\beta] \subseteq [\alpha]$[1] we can conclude to the truth of $X\beta Y$. Thus, a context is DE iff an expression occurring in it can be replaced by a semantically stronger expression *salva veritate*.

Although Ladusaw's characterization of the contexts in which *any* can occur appropriately is quite successful, his proposal can't be the whole story. First, *any* sometimes has a 'F(ree) C(hoice)' reading, and if it does, it can occur in a non-DE context and gets a universal reading.

(1) a. *Any* owl hunts mice.
b. *Any* farmer who owns a donkey beats it.
c. John talked to *any* woman who came up to him.

Second, the DE analysis might give a reasonably good *description* of the contexts that licenses NPI-*any*, it does *not explain* why this is the case and it takes the *meaning* of the item to be *irrelevant*.

Kadmon & Landman (1993) (henceforth K&L) account for these problems by taking the meaning of *any* into account.[2] They argue that an NP of the form *any CN* should be interpreted like the corresponding indefinite *a CN*, but where the domain of quantification over which the indefinite with *any* ranges is *wider* than the domain of *a CN*, and where the sole difference between NPI-*any* and FC-*any* lies in the fact that the latter, but not the former, is interpreted generically.

[1] Where $[\alpha]$ denotes the semantic meaning of expression α.

[2] Krifka (1995) developed a very similar approach independently. Both approaches seek to solve other problems of Ladusaw's analysis as well, but we won't bother about that in this paper. I this paper I use K&L's analysis, although I believe that Krifka's analysis would do equally well.

Moreover, K&L propose an explanation for why NPI-*any* is licensed only in DE contexts. This proposal involves a second meaning-part of *any*: the interpretation of the sentence after domain widening has to be *stronger* than before widening. Consider (2-a) versus (2-b):

(2) a. *John ate *anything*. $\exists x Ate(j,x)$
b. John did*n't* eat *anything*. $\neg\exists x Ate(j,x)$

(2-a) is unacceptable, but (2-b) is not. Because extension of the domain over which (kind of) things John might eat would make 'John ate something' only weaker, i.e. less informative, (2-a) is correctly predicted to be unacceptable. Sentence (2-b), on the other hand, gets a stronger, more informative, interpretation after domain widening, and is thus predicted to be acceptable. Thus, the licensing of NPI-*any* in DE contexts does not have to be stipulated, but falls out as a 'theorem' of their analysis.

K&L's widening analysis of *any* is attractive and seems to be just what we need for NPI-*any*.[3] As noted by Dayal (1998), however, the proposal is more problematic for FC-*any*. Recall that K&L propose that *any* should have the same meaning as the corresponding indefinite, and gets a free choice interpretation just in case the corresponding indefinite is read generically. Dayal noted that this is not quite right: whereas (1-c) clearly has a universal interpretation, the same sentence with the corresponding indefinite, i.e. (3), does not have a generic reading.

(3) John talked to *a* woman who came up to him.

Moreover, while generics allow for exceptions, sentences with FC-*any* don't. This strongly suggest that FC-*any* should not be thought of as being a standard indefinite that receives a generic interpretation. But this gives rise to the question how, then, to account for the universal readings of *any* in (1-a)-(1-c)? Dayal (1998) suggests to give up on K&L's uniform analysis of *any* and proposes that in contrast to NPI-*any*, FC-*any* denotes a universal quantifier. However, to account for the fact that (4-a) has an additional 'that-can't-be-an-accident'-interpetation not shared by (4-b),

(4) a. *Any* student in Mary's class is working on NPIs.
b. *Every* student in Mary's class is working on NPIs,

[3] K&L and Krifka already showed that the widening + strengthening account can explain the licensing of NPI-*any* in some other contexts than just the DE-ones. Van Rooij (2003) and Van Rooij (to appear) shows that it works for questions and antecedents of counterfactual conditionals as well.

she claims that it is a special kind of quantifier: it quantifies over *possible* rather than *actual* individuals. The intuitions Dayal wants to account for are real, but one wonders whether we really have to give up on a uniform analysis of *any*. We propose that this is not needed if we analyze both *any*s as *counterfactual donkeys* (in disguise).

3 Counterfactual donkey sentences

3.1 Counterfactuals

Stalnaker (1968) and Lewis (1973) gave the following well-known analysis of (counterfactual) conditional sentences represented by $\phi > \psi$:$\phi > \psi$ is true at w if some $\phi \wedge \psi$-worlds are closer to w than any $\phi \wedge \neg\psi$-worlds. The notion 'closer ϕ-world to w than' can be explained in terms of an ordering relation on the accessible worlds (but let us assume that all worlds are accessible). The ordering relation '$\leq_w$' between worlds is required to obey the following conditions: reflexivity, transitivity, connectedness, and strong centering.[4] The intuitive meaning of $v \leq_w u$ is that v is at least as close, or similar, to w as u is. Accepting the limit assumption, i.e., $[\phi] \neq \emptyset \Rightarrow \{v \in [\phi] : \forall u \in [\phi] : v \leq_w u\} \neq \emptyset$ (or limiting our analysis to the finite case), we can reformulate the semantics of counterfactuals in terms of a selection function. Let us define a selection function f in terms of the similarity relation as follows: $f_w([\phi]) = \{v \in [\phi] | \forall u \in [\phi] : v \leq_w u\}$. The proposition expressed by the conditional $\phi > \psi$ is now the following set of possible worlds: $[\phi > \psi] \stackrel{def}{=} \{w \in W : f_w([\phi]) \subseteq [\psi]\}$. That is, $\phi > \psi$ is true in w iff ψ is true at every closest ϕ-world to w.[5]

3.2 Donkey sentences

Lewis and Stalnaker assumed that the meaning of a sentence can be represented adequately by a set of possible worlds. It is well-known, however, that this leads to problems for the analysis of indefinites and pronouns, especially in donkey sentences. Of course, Kamp (1981) and Heim (1982) showed that we could maintain a uniform analysis of indefinites and pronouns, and still get the truth conditions

[4]Reflexive: for all v : $v \leq_w v$; transitive: for all v, u, x: if $v \leq_w u$ and $u \leq_w x$, then $v \leq_w x$; connected: for all $v.u$, $v \leq_w u$ or $u \leq_w v$; and strong centering: $\forall v : w \neq v \Rightarrow (w \leq_w v$ and $v \not\leq_w w)$.

[5]Of course, Stalnaker's analysis is still stronger, because he makes the additional assumption that for all $[\phi] \subseteq W$ and $w \in W : f_w([\phi])$ is always a singleton set. In terms of the similarity relation between worlds, this means that Stalnaker assumes that $<_w$ obeys trichotomy: $\forall u, v$: $u <_w v$ or $v <_w u$ or $u = v$.

of donkey sentences right, while Groenendijk and Stokhof (1991) and others have demonstrated that such an analysis is even no threat to compositionality, if we are willing to change our static possible-world conception of the meaning of a sentence. According to the alternative dynamic view, we interpret sentences with respect to a context that is represented by a set of world-assignment pairs, and the meaning of the sentence itself can be thought of as the update of this context, where possibilities are *eliminated* when the sentence is false, and the assignment of the possibilities is *enriched* if a new variable, or discourse referent, is introduced by way of an indefinite.[6] According to this analysis, the formula $\exists x[Px] \rightarrow Qx$ is predicted to be equivalent with $\forall x[Px \rightarrow Qx]$, which means that we can account for (standard) donkey sentences in a systematic and compositional way.

3.3 Counterfactual donkeys

In standard indicative donkey sentences it is unproblematic to assume that the conditional connective should be interpreted as material implication. But donkey sentences not only show up in indicative mood; we have counterfactual donkey sentences as well:

(5) If John owned a donkey, he would beat it.

Representing counterfactuals as $\phi > \psi$ like before, we would like to represent (5) abstractly as $\exists x[Px] > Qx$, while still being equivalent with $\forall x[Px > Qx]$. The challenge is to account for this equivalence, without giving up our standard dynamic account of indefinites. In van Rooij (to appear) it is shown how this challenge can be met, and I will repeat the argumentation from that paper here.

Suppose that we want to interpret a sentence of the form $\exists x\phi > \psi$ in possibility $\langle w, g\rangle$. According to the standard Lewis/Stalnaker analysis of counterfactuals, we should then select among those possibilities that verify $\exists x\phi$ the ones that are closest to $\langle w, g\rangle$ and check whether they also make ψ true. Because ϕ might contain free variables that should be interpreted by means of g, the natural context of interpretation of $\exists x\phi$ is the set $W(g) = \{\langle v, h\rangle : v \in W \ \& \ h = g\}$.[7] After the interpretation of $\exists xPx$, for instance, we end up with a set of world-assignment pairs like $\langle v, h\rangle$ where variable x is in the domain of assignment h, and $h(x)$ is an element of the set denoted by P in world v. Let us denote this set of world-assignment pairs by $/\exists xPx/_g$. To check whether $\exists x[Px] > Qx$ is true in $\langle w, g\rangle$ we have to select among the possibilities in $/\exists xPx/_g$ those that are closest to

[6] I assume here that assignments are partial functions.

[7] For simplicity we assume that all worlds have the same domain, although this is inessential.

$\langle w,g\rangle$, and see whether they also verify Qx. But this means that we need an ordering relation, $\leq^*_{\langle w,g\rangle}$, between world-assignment pairs with respect to possibility $\langle w,g\rangle : \langle u,k\rangle \leq^*_{\langle w,g\rangle} \langle v,h\rangle$. Fortunately, there is a natural way to define an ordering '$\leq^*$' between world-assignment pairs in terms of the ordering relation between worlds used by Lewis and Stalnaker:[8]

Definition 1 Given a Lewis/Stalnaker similarity relation $\leq_w$ between worlds, we define the similarity relation $\leq^*_{\langle w,g\rangle}$ between world-assignment pairs as follows: $\langle v,h\rangle \leq^*_{\langle w,g\rangle} \langle u,k\rangle$ iff$_{def}$ $h = k \supseteq g$ and $v \leq_w u$.

Notice, first, that in case the antecedent ϕ of a counterfactual doesn't introduce new variables, or discourse markers, all the elements of $/\phi/_g$ are world-assignment pairs with assignment g. Thus, in that case '$\leq^*$' comes down to '$\leq$', because we can now ignore the assignment function. But suppose that ϕ is of the form $\exists xPx$. In that case, all the assignments in $/\exists xPx/_g$ differ from g in that they also assign an object to x. Let $\langle v,h\rangle$ and $\langle u,k\rangle$ be two possibilities in $/\exists xPx/_g$. According to definition 1, to check whether the one is more similar to $\langle w,g\rangle$ than the other only makes sense in case h assigns the same individual to x as k, $h(x) = k(x)$.[9] But this means that we check for each individual d separately what are the closest possibilities to $\langle w,g\rangle$ that make Px true. We define the selection function as follows:

Definition 2 Given a similarity relation $\leq^*_{\langle w,g\rangle}$ between world-assignment pairs as defined in definition 1 and a standard dynamic update function $[[\cdot]]$, we define the selection function f^* from sets of world-assignment pairs to sets of world-assignment pairs as follows:

$$f^*_{\langle w,g\rangle}(/A/_g) \stackrel{def}{=} \{\langle v,h\rangle \in /A/_g : \neg\exists\langle u,k\rangle \in /A/_g : \langle u,k\rangle <^*_{\langle w,g\rangle} \langle v,h\rangle\},$$
$$\text{where } /A/_g \stackrel{def}{=} [[A]](\{\langle v,h\rangle : v \in W \ \&\ h = g\}), \text{ and}$$
$$j <^*_i k \text{ iff}_{def}\ j \leq^*_i k \text{ but not } k \leq^*_i j.$$

It is easy to see that it now follows that $f^*_{\langle w,g\rangle}(/\exists xPx/_g)$ comes out to be equivalent with $\bigcup_{d\in D} f^*_{\langle w,g\rangle}(\{\langle v,g[^x/_d]\rangle : d \in I_v(P)\})$. On our assumption that $\phi > \psi$ is true in $\langle w,g\rangle$ iff $\forall\langle v,h\rangle \in /\phi/_g : \langle v,h\rangle$ verifies ψ, we end up with the happy result that

[8]The same ordering has been used in Schulz and van Rooij (2006) to account for some apparent problems of exhaustive interpretation.

[9]Though the relation '$\leq_w$' is connected, '$\leq^*_{\langle w,g\rangle}$' is not.

$\exists x[Px] > Qx$ is equivalent with $\forall x[Px > Qx]$.[10] I conclude that we can account for counterfactual donkey-sentences in a natural and compositional way.

4 Free choice *any* as a counterfactual donkey

Notice that for $\exists x[Px] > Qx$ to be true in world w where P has a non-empty extension it is not enough that all individuals in the extension of P also have property Q: it must also be the case for all non-P individuals that they would have property Q, if they had property P. Thus, $\exists x[Px] > Qx$ is *stronger* than $\forall x[Px \rightarrow Qx]$. This last feature suggests that we can account for the extra 'that-can't-be-an-accident'-interpretation of FC-*any* when we think of it as a counterfactual donkey in disguise.[11]

The idea is to translate Dayal's *any* in a (dynamic) Montague-style framework (with connective '$>$') by '$\lambda P \lambda Q \exists x[Px] > Qx$'. Notice, first, that on such an analysis, (1-a) = *Any owl hunts mice* is interpreted as a kind of generic statement, though without exceptions, and that on this analysis (1-b) = *Any farmer who owns a donkey beats it* is treated as a standard (though counterfactual) donkey sentence, without any further problems. Second, on this analysis (4-a) = *Any student in Mary's class is working on NPIs* has a stronger meaning than (4-b) *Every student in Mary's class is working on NPIs*, because (4-a) has the extra 'that-can't-be-an-accident'-interpretation.[12] Remember that to account for this effect, we don't have to quantify over possible individuals.

A problem for any analysis of *any* is that it should be able to account for is the phenomenon called *subtrigging*: the fact that whereas (6-a) is not appropriate, (6-b) is:

(6) a. *Yesterday, John talked to *any* woman.
    b. Yesterday, John talked to *any* woman *he saw (yesterday)*.

What has to be explained is how it can be that the extra 'he saw (yesterday)' added to the restrictor of *any* turns the inappropriate (6-a) into the appropriate

[10] To be sure, this equivalence holds for many-ary donkey sentences as well: if $\vec{x}$ is an n-ary tuple of variables and ϕ and ψ are n-ary predicates, our analysis predicts that $\exists \vec{x}[\phi(\vec{x})] > \psi(\vec{x})$ is equivalent with $\forall \vec{x}[\phi(\vec{x}) > \psi(\vec{x})]$.

[11] Although the term 'counterfacual' is now not completely appropriate anymore.

[12] The difference between the meaning of *any* and *every* disappears, on our analysis, if the restricting noun of the quantifier is 'empty'. Thus, *Anybody smokes* is predicted to mean the same as *Everybody smokes*. I take it that the former sentence is less appropriate than the latter, and would like to account for that by noticing that there is a more standard alternative (the sentence with *every*) with the same meaning.

(6-b). Dayal's (1998) insight was that (6-a) is inappropriate because the 'episodic' character of the scope (due to the verb 'talked') doesn't match the non-episodic character of the restrictor 'any woman'. Dayal's proposal that *any* quantifies over *possible* instead of *actual* individuals was crucial for her to formally account for this insight. We don't quantify over possible individuals but can still account for Dayal's insight by our 'counterfactual' treatment of *any*: just like Dayal, also for us it is not enough to verify a sentence like (6-a) by just looking at the actual women. If we assume that episodically used verbs should always be interpreted in the actual world, (6-a) would be interpreted as saying that 'for all individuals, if he/she would be a woman, John actually talked to her'. According to our analysis, this can only be the case if John (actually) talked to *everybody* yesterday, which is a ridiculously strong and obviously false claim. For this reason, I propose, (6-a) is inappropriate. This is all fine, but why, then, is (6-b) suddenly appropriate? Dayal (1998) argues that this is due to the episodic character of the extra 'he saw (yesterday)' added to the restrictor. What this does, intuitively, is to turn the whole restrictor into one with an episodic character. Again, we will follow Dayal. On our assumption that episodic predicates should be interpreted with respect to the actual world, this means that *any* in (6-b) now quantifies only over individuals John *actually* saw (yesterday). If we add the reasonable assumption that if one part of a complex predicate gets a episodic reading, the whole predicate gets such a reading, it means that *any* in (6-b) quantifies only over *actual* women John saw yesterday. But then, (6-b) becomes a statement with very modest truth conditions, and there is no pragmatic reason anymore to count it as being inappropriate.

In this section we have dismissed K&L's analysis of FC-*any* as a generic indefinite. This doesn't mean, however, that I would like to give up their constraint on appropriate use of FC-*any* as well. In fact, adopting their constraint gives rise to an interesting consequence. Recall that K&L propose that *any* can be used appropriately, only if domain widening results in a *stronger* assertion. Let us say that $\exists x_D[Px]$ means that the domain of quantification of '$\exists$' is restricted to individuals in D. Observe now that if $D' \subset D$, it immediately follows that $\exists x_D[Px] > q$ is stronger than $\exists x_{D'}[Px] > q$. This is so, because $\exists x_{\{d_1,d_2\}}[Px] > q$, for example, comes out as being equivalent with $(P(d_1^*) > q) \wedge (P(d_2^*) > q)$ (d^* is a constant that uniquely denotes d), while $\exists x_{\{d_1\}}[Px] > q$ is equivalent with $P(d_1^*) > q$, and is thus weaker. Thus, it is predicted that FC-*any* is appropriate in *positive* contexts. If we embed FC-*any* under negation, however, domain extension leads to a weaker assertion,[13] which means that FC-*any* is predicted to be appropriate *only* in positive contexts. I believe that this is in accordance with the facts.

[13]This is obvious, because $\neg(\exists x_{\{d_1,d_2\}}[Px] > q)$ is now equivalent with $\neg(P(d_1^*) > q) \vee \neg(P(d_2^*) > q)$, which is weaker than $\neg(P(d_1^*) > q)$, which is equivalent with $\neg(\exists x_{\{d_1\}}[Px] > q)$.

Let us remind ourselves what we have done in this section: we have accounted for Dayal's observations (or at least the ones mentioned in this paper) concerning FC-*any* without having to give up the popular assumption that all uses of *any* should be handled by means of existential quantification. Although FC-*any* is represented in terms of existential quantification, we still predict a universal reading and – via K&L's domain widening and strengthening – that FC-*any* is appropriate only in positive contexts. The picture that emerges, then, is the following: *any* should always be represented in terms of an existential quantifier, and its use is appropriate just in case domain extension gives rise to a stronger assertion. For NPI-*any* we follow K&L and treat it standardly as $\lambda P \lambda Q \exists x[Px \wedge Qx]$, which means that it can be used appropriately (almost) only in DE contexts. For FC-*any* we proposed to represent it as $\lambda P \lambda Q \exists x[Px] > Qx$, and we have seen that this results in the appropriateness condition that it can be used in positive contexts only.

5 NPI-*any* as a weak counterfactual donkey

Although I find this emerging analysis appealing, it should be clear that we can't be fully satisfied yet. First of all – as will be discussed in the final section – other authors have proposed a *conditional* analysis of FC-*any* before, and so it is not clear what is won by our particular treatment making use of the counterfactual connective '$>$'. Second, the treatment suggested so far of FC-*any* and NPI-*any* is not yet uniform enough: the connectives involved in the different uses of *any* are different, and we still have to admit that *any* is ambiguous. Without claiming that we can get rid of this ambiguity completely, I would like to propose that the different uses of *any* are almost identical, if we think also of NPI-*any* from a counterfactual donkey perspective. I will argue that the FC and NPI uses of *any* are as closely related as the strong and weak readings of (counterfactual) donkey sentences. In this section I will first give an analysis of *weak* counterfactual donkey sentences, and then propose to treat NPI-*any* in terms of it.

5.1 Weak counterfactual donkey sentences

Although I believe that a counterfactual donkey sentence is in general equivalent to a formula with wide scope universal quantification, there are (at least) two types of examples where this equivalence seems dubious, or even obviously wrong:

(7) a. If Alex were married to a girl from his class, it would be Sue.
b. If I had a dime in my pocket, I would throw it into the meter.

For (7-a) to be true, it doesn't seem to be required that for any individual (e.g. Mary), if that individual were from Alex's class and married to him, it would be Sue. For this paper the second type of example, i.e (7-b), is more interesting. The indicative version of this example is of course the standard example that shows that not all donkey sentences give rise to universal readings.

The universal reading of donkey sentences in standard DRT, FCS, and dynamic semantics depends on the assumption of unselective binding. I made that assumption in section 3 and 4 as well, by defining the ordering relation between world-assignment pairs as in definition 1. However, this gives rise to the problem of how we can account for weak readings of donkey sentences (the indicative version of (7-b)) and for asymmetric readings of adverbs of quantification (the proportion problem). The standard way to solve those problem in dynamic semantics (going back to Root (1986) and also defended in Dekker (1993)) is to give up unselective binding for all variables involved. The idea is to quantify not over *individual* assignments, but rather over *equivalence classes* of assignment fuctions, and require that for the truth of the donkey sentence there should be an element of each equivalence class of assignments verifying the antecedent that makes the consequent true. Two different assignments are in the same equivalence class of assignment functions iff the variables the values of which differ are variables that are not selected over. The nice thing about this solution is that (i) one still treats all indefinites in the same way, and (ii) the indefinite whose introduced variable is not unselectively bound can still be picked up anaphorically in the consequent.

So, how does this work for counterfactual donkey sentences? Well, we will represent a counterfactual in general by a formula $\phi >^X \psi$, where ϕ and ψ are as expected, and X is the set of variables introduced by ϕ that is unselectively bound. Notice that even if ϕ contains an indefinite, X might still be the empty set. Now we are going to slightly redefine the ordering relation between possibilities as follows:

Definition 3 Given a Lewis/Stalnaker similarity relation $\leq_w$ between worlds, we define the similarity relation $\leq^{*,X}_{\langle w,g\rangle}$ between world-assignment pairs as follows: $\langle v,h\rangle \leq^{*,X}_{\langle w,g\rangle} \langle u,k\rangle$ iff$_{def}$ $h,k \supseteq g$, $h\upharpoonright^X = k\upharpoonright^X$, and $v \leq_w u$.

where $h\upharpoonright^X$ denotes the restriction of h to X, and thus that $h\upharpoonright^X = k\upharpoonright^X$ iff $\forall x \in X : h(x) = k(x)$. What this definition comes down to is a weakening of definition 1, because it now allows for a comparison between possibilities where the assignments are not the same. In particular, if $X = \emptyset$ it immediately holds that the assignments are irrelevant for the ordering relation: $\langle v,h\rangle \leq^{*,\emptyset}_{\langle w,g\rangle} \langle u,k\rangle$ iff $v \leq_w u$.

If one makes the assumption that one can only be married to one girl, this small, but independently motivated, change already accounts for example (7-a) discussed above, without making the assumption that indefinites are ambiguous. We redefine the selection function as follows:

Definition 4 $f^{*,X}_{\langle w,g\rangle}(/\phi/_g) = \{i \in /\phi/_g : \neg\exists j \in /\phi/_g : j <^{*,X}_{\langle w,g\rangle} i\}$.

Now, example (7-a), for instance, is predicted to be true if represented such that $X = \emptyset$ just in case Alex is married to Sue (and only Sue) in the world(s) closest to the actual one where Alex is married to a(ny) girl from his class.

But what should we do to account counterfactual variants of *weak* donkey sentences like (7-b)? To account for weak readings of counterfactual donkey sentences, we have to assume that there are possibilities closest to the actual world where I have more than one dime in my pocket. What is required to account for such cases is to lump together all of the possibilities where the difference in assignment doesn't matter, and say that only one of those assignments has to be taken into account for the interpretation of the consequent. Let us first say that $\langle v,h\rangle \sim^X \langle u,k\rangle$ iff $v = u$ and $h\upharpoonright^X = k\upharpoonright^X$. Then we give the following general truth conditions of conditionals:

Definition 5 $\phi >^X \psi$ is true in $\langle w,g\rangle$ iff $\forall\langle v,h\rangle \in f^{*,X}_{\langle w,g\rangle}(/\phi/_g) : \exists\langle u,k\rangle \in f^{*,X}_{\langle w,g\rangle}(/\phi/_g)$: $\langle u,k\rangle \sim^X \langle v,h\rangle$ and $\langle u,k\rangle$ verifies ψ.

Notice that in terms of this definition we can account for both strong and weak counterfactual donkey sentences. A strong counterfactual donkey sentence like (5) will be represented by $\exists x[Px] >^{\{x\}} Qx$ and its meaning will be equivalent with that of the universal sentence $\forall x[Px > Qx]$ just as in the original account proposed in section 3.3. A weak counterfactual donkey sentence like (7-b), on the other hand, will be represented by a formula of the form $\exists x[Px] >^{\emptyset} Qx$ and is true even if in the closest counterfactual world(s) where I have more than one dime in my pocket, I throw only one of them into the meter.

5.2 NPI-*any* revisited

As suggested above, I propose that NPI-*any* is going to be treated as a *weak* counterfactual donkey sentence. More in particular, the proposed (Montague-style) meaning of NPI-*any* will be $\lambda P\lambda Q\exists x[Px] >^{\emptyset} Qx$. I will show in a moment that given our interpretation of counterfactuals, this formula gives rise to the same truth conditions as the more standard $\exists x[Px \wedge Qx]$ if we make one more assumption: that a sentence in which *any* with restrictor P occurs *presupposes* that P has a non-empty extension in the actual world. Notice, first, that this assumption is quite innocent for uses of FC-*any* if these are analyzed as we proposed in section 4. In particular, it doesn't exclude at all that we take into account non-actual worlds to verify the sentence in which it occurs. Given our analysis of weak counterfactual donkey sentences and our proposed representation of NPI-*any*, on the other hand, this innocent looking presupposition has the very welcome effect that $\exists x[Px] >^{\emptyset} Qx$ will have exactly the same truth conditions as the formula $\exists x[Px \wedge Qx]$, which is the standard translation of indefinites. By K&L's widening and strengthening analysis, this will thus have the effect that we predict that NPI-*any* is, indeed, licensed (almost) only in DE contexts.

Let me now show why $\exists x[Px] >^{\emptyset} Qx$ will have exactly the same truth conditions as the formula $\exists x[Px \wedge Qx]$, if P has a non-empty extension in the actual world. The first thing to notice is that because the set of variables NPI-*any* unselectively quantifies over is empty, i.e. $X = \emptyset$, the ordering relation in terms of which our formula $\exists x[Px] >^{\emptyset} Qx$ is interpreted comes down to the standard Lewis/Stalnaker ordering between possible worlds. With Lewis and Stalnaker we have assumed that this ordering satisfies strong centering, which means that for any two different worlds v and w, w is always strictly more similar to itself as v is to w: $w <_w v$. Assuming that P has a non-empty extension in actual world w – i.e., assuming that the presupposition is satisfied – it follows by definition 5 that to verify $\exists x[Px] >^{\emptyset} Qx$ we only have to consider the actual world w. Take the possibility in which the sentence is interpreted to be $\langle w, g\rangle$. By definition 5 again, for $\exists x[Px] >^{\emptyset} Qx$ to be true in $\langle w, g\rangle$, it is enough if there is a h such that $\langle w, h\rangle \in /\exists x Px/_g$ and $\langle w, h\rangle$ verifies Qx. But this means that there must be a $d \in D$ such that $h = g[^x/_d]$ (meaning as usual that h is just like g except that it assigns variable x to individual d) and $h(x) \in I_w(P)$ and $h(x) \in I_w(Q)$ (where $I_w(P)$ denotes the extension of P in w according to the model's interpretation function I). But that obviously means that $\exists x[Px] >^{\emptyset} Qx$ has exactly the same truth conditions as the formula $\exists x[Px \wedge Qx]$, if P has a non-empty extension, which is precisely what we wanted to show.

Given this proof, we have shown that we can treat not only FC-*any* as a counterfactual donkey sentence (in disguise), but NPI-*any* as well. The only difference is that whereas FC-*any* is interpreted as a *strong* donkey sentence, NPI-*any* is interpreted as a *weak* donkey sentence. Exactly because of this, (i) FC-*any* gets a *universal* interpretation and NPI-*any* an *existentia*l one, and thus (ii) FC-*any* is via K&L's analysis licensed only in positive contexts, while NPI-*any* is licensed (almost) only in *negative* contexts.

I conclude that an analysis of the different uses of *any* as counterfactual donkey sentences (in disguise) is quite successful because (i) it gives rise to the same meanings as the most successful analyses of FC-*any* (Dayal) and NPI-*any* (K&L), but it allows us to treat them all in an (almost) uniform way, and reduce their difference to an independently required distinction between different readings of donkey sentences (strong versus weak).

6 Comparison and Conclusion

Negative polarity and Free Choice Items are hotly debated in the literature. But apart from the papers of Dayal and K&L (and Krifka), I haven't done much justice to this discussion in this paper. In this concluding section I will relate my analysis with some other analyses not discussed in this paper, and discuss some possible modifications and extensions.

The first thing to note is that as far as our analysis of FC-*any* is conditional in nature, this is not very new by itself.[14] In fact, LeGrand (1975), Giannakidou (2001), and others already account for subtrigged *any* sentences as involving strict conditionals. Indeed, one can account for the intuition that FC-*any* is stronger than *every* by treating it in terms of a strict conditional that quantifies over worlds. However, it doesn't seem to be possible (or without making strong ad hoc assumptions) – in contrast to our analysis in terms of counterfactual connective '$>$' – to give a similar treatment of NPI-*any* in terms of strict conditionals such that this item gives rise to its standard existential meaning. In this sense, LeGrand's and Giannakidou's analyses of *any* will end up to be less uniform than ours.

A more uniform analysis of both uses of *any* has been proposed by Chierchia (ms), modified by Aloni & van Rooij (2006). Chierchia follows K&L in their analysis of *any* as an ordinary indefinite plus the 'widening-leads-to-strengthening' condition, but seeks to account for the universal reading of FC-*any* by conversational implicature rather than by appealing to genericity. Thinking of an existential sentence as a large disjunction, Chierchia (ms) proposes that '$A \vee B$' gives rise to the conversational implicature that the speaker doesn't know that '$A \wedge \neg B$' and doesn't know that '$\neg A \wedge B$' are true. By assuming that the speaker knows what he is talking about, we can conversationally implicate that the speaker knows that both conjunctions are false, and thus that '$A \wedge \neg B$' and '$\neg A \wedge B$' are both false. But in conjunction with the assertion this means that it has to be the case that '$A \wedge B$' is true. Although appealing at first sight, I believe (on second thought) that the approach has to be rejected already for conceptual reasons: adopting this type of approach would undermine the central character of a conversational implicature. Conversational implicatures are, by definition, *cancelable*. Most naturally, what can be cancelled is the assumption that the speaker is knowledgeable: the step from 'not know A' to 'know not A' (cf. Schulz & van Rooij, 2006). Applying cancelability to Chierchia's reasoning, however, would make the wrong prediction: it is predicted that the FC-*any* sentence can be true, although at the same

[14] See also, e.g., the approaches of Aloni, and of Minjoo Kim to *FC*-any proposed at SUB-11.

time the speaker doesn't know that the universal statement is true. So, with Jayez & Tovena (2005), I believe (by now) that it is not a good idea to account for the universal force of FC-*any* in terms of a conversational implicature.[15]

Where Chierchia wants to derive the strong reading of FC-*any* by making strong knowledge assumptions, Javez & Tovena (2005) and others would rather like to infer universality from one's *lack of knowledge*, or from one's *indifference*. In fact, this assumption is not very different from Dayal's (1998) *vagueness requirement*. Dayals argues that 'John talked to any of these women' is bad because in order for the speaker to know that the sentence is true, the speaker has to know of each of the individual women he is looking at that John talked to her. But this requirement violates Dayal's vagueness constraint on the quantificational domain of FC-*any* that the speaker should not know (or care about, we might add) exactly (roughly speaking) who he was talking about. Part of this irrelevance or lack of knowledge requirement we have already accounted for by our counterfactual analysis: to see whether a sentence of the form '$\exists x[Px] >^{\{x\}} Qx$' is true we can't limit ourselves to the individuals who actually have property P. In fact, given that Dayal's treatment of *whatever* (Dayal, 1997) is so close to her analysis of FC-*any*, it looks attractive to account for the universal reading of sentences like 'John voted for *whoever* was on top of the ballot' in terms of a counterfactual donkey analysis as well. Another part we have not accounted for yet: that the speaker doesn't know, or care about, which individuals actually have property P. I don't see any harm being done if we add this constraint as a presupposition for the use of FC- (or perhaps of any?) uses of *any*.

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