

# Aspects of the Indefiniteness Effect\*

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**Abstract.** This paper proposes an account for the indefiniteness effect discussed in Wang & McCready (2005). We shall argue that the effect arises from (a) the tendency of indefinites in certain interrogative constructions to take wide scope over WH-terms, resulting in ‘quantifying into’ questions, and (b) the pragmatic impropriety of interrogatives with wide scope taking indefinites to form speech acts for requesting answers. Our proposal is formally implemented using the interpretation of quantifying into questions as choice readings provided by Groenendijk & Stokhof (1984).

## 1 Introduction

Wang & McCready (2005) first noticed the *the indefiniteness effect*, seen in (1a,b) and (2a,b), where occurrences of indefinites in the interrogative construction *What is wrong with \_\_\_?* and *Where is \_\_\_?* (hereafter *anti-indefinite constructions*) are infelicitous.

- (1) a. What is wrong with John/the student/every student/him (the three students/most students/you/his students)?  
b. What is wrong with a student (/ \*three students/ \*no more than three students/ \*at least three students/ \*no students)?  
(Wang & McCready 2005: 11)
- (2) a. Where is (are) the man/John/every man/(you /most men)?  
b. Where is (are) \*a man/ \*no man/( \*two men/ \*at least three men)?

The indefiniteness effect, as noted in Wang & McCready (2005), can also be observed in a variety of other interrogative constructions such as *What do you think about \_\_\_?*, *Are you ok with \_\_\_?*, *What can you say about \_\_\_?*, etc.<sup>3</sup> Wang & McCready (2005) did not offer an account for the effect, however. The objective of this paper is to remedy this lack by proposing an account.

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<sup>3</sup> If the reader finds it difficult to detect the infelicity in (1b) and (2b), imagine how one might respond when asked questions.

The interest of the indefiniteness effect initially comes from its being a counter-part of the *definiteness effect* in the existential *there-be* construction (cf. Milsark 1977 and Keenan 1987) and the possessive *have* construction (cf. Bach 1967 and Partee 1999), shown in examples (3a,b) and (4a,b), respectively.

- (3) a. There is (are) a man/at least one man/(two men/many men/at least two men)?  
 b. There is (are) \*John/\*the man/\*every man/(*\*most men/\*the men*)?  
 (4) a. John has a daughter/ at least one daughter/(two daughters/many daughters)?  
 b. John has *\*the daughter/\*every daughter/(*\*most daughters*)?*

We shall call the constructions which exhibit the definiteness effect *anti-definite constructions*. One might expect that the indefiniteness effect to be accounted for as an “inverse” of a theory of the definiteness effect. Nonetheless, as already indicated in Wang & McCready (2005), there is no existing theory of the definiteness effect that can be transformed into an account for the indefiniteness effect. Existing theories of the definiteness effect (cf. Barwise & Cooper 1981, Keenan 1987, Diesing 1992, etc.) may at best provide a classification of the quantifiers in the effect, but fail to provide an explanation for the effect.<sup>4</sup>

The indefiniteness effect is even more perplexing than it looks. Even though there is a robust intuition that (1b) and (2b) are infelicitous, they also seem to have some felicitous interpretations, which make the indefiniteness effect further diverge from the definiteness effect. To begin with, some speakers have the intuition that, for example, *Where is a man?* in (2b) can receive a felicitous interpretation as *Where is there a man?*. If this is right, there will be felicitous interpretations for the other examples in (2b). We are not sure how clear this intuition is; we don’t share it completely. In any case, if *Where is a man?*, as well as the other examples in (2b), can really receive a felicitous interpretation like *Where is there a man?*, it is not the interpretation that we aim to account for (we’ll say more about the interpretation we think is most salient shortly). Moreover, this paraphrase strategy cannot be extended to the cases in (1b); it’s totally unclear how to apply the same paraphrase strategy for the infelicitous *What is wrong with a man?*. Doing so would yield something like *What is there wrong with a man?* or *What is wrong with that there is a man*, which is senseless. What we aim to pursue is an interpretation of indefinites that robustly induces the infelicitous occurrences in the interrogative constructions like *What is wrong with \_\_\_?*, *Where is \_\_\_?*, etc.

<sup>4</sup> We would like to further indicate that a classification of quantifiers based on the definiteness effect cannot be applied to the indefiniteness effect. For example, by a classification according to the definiteness effect, the quantifier *neither man* should be classified as compatible with the anti-definite constructions. Based on the classification, taking the indefiniteness effect as an inverse of the definiteness effect predicts that *neither man* should have felicitous occurrences in anti-indefinite constructions. However, this prediction is wrong, since *What is wrong with neither man?* sounds infelicitous.

Wang & McCready (2005) show a second type of felicitous interpretations for indefinites in anti-indefinite constructions, that arises from the generic interpretation of indefinites. The effect of the generic interpretation of indefinites is even more salient in (5a,b) where the indefinites are easily understood as generic.

- (5) a. What is wrong with a man with two mistresses?  
 b. Are you ok with a man with two mistresses?

(5a) has a salient generic interpretation with a quasi-universal flavor, which is similar to *What is wrong with every man with two mistresses?* or *In general, what is wrong with a man with two mistresses?*; (5b) has a salient generic interpretation which is similar to *Are you ok with every man with two mistresses?* or *In general, are you ok with a man with two mistresses?* It has long been noticed that the generic interpretation of indefinites carries certain features of ‘definiteness.’ The role of this definiteness feature in the indefiniteness effect will be elaborated on later in the paper.

Some people may have the intuition that (1b) and (2b) can receive felicitous interpretations from either wide scope or specific interpretations of indefinites.<sup>5</sup> We do not share this exact intuition. Nonetheless, it is clear to us that indefiniteness effect constructions can be made felicitous by embedding them into declarative sentences, e.g. (6a,b). Here the indefinite indeed receives a wide scope or specific interpretation.

- (6) a. What is wrong with many professors is that they don’t research anymore.  
 b. I know where a (certain) man is.

Once we embed the infelicitous *What is wrong with many professors?* in (6a), and transform the infelicitous interrogative *Where is a man?* into an indirect embedded interrogative in (6b), the sentences become fine. We also need an explanation for this effect.

In this paper, we explain why theories of interrogatives in the literature fail to account for the indefiniteness effect, and we provide a proposal to account for it. Our proposal has it that there is nothing syntactically and semantically wrong with the occurrences of indefinites in the anti-indefinite constructions. Syntactically, indefinites in anti-indefinite constructions are grammatical. Semantically, we take it that they can receive felicitous narrow scope interpretations according to Karttunen (1977) and Groenendijk & Stokhof (1984), and felicitous wide scope interpretations (quantifying into questions) from Groenendijk & Stokhof (1984) or Higginbotham (1993) as choice interpretations. However, pragmatically speaking, indefinites in anti-indefinite constructions tend to take wide scope interpretations, and wide scope interpretations of indefinites in interrogatives do not constitute proper speech acts that request answers. We suggest that it is this pragmatic fact that induces the indefiniteness effect.

The paper is organized as follows. In section 2 and 3, we consider an account for the indefiniteness effect based on certain syntactic and semantic aspects of

<sup>5</sup> Some speakers have told us that they find *Where is no man?* acceptable under some interpretation, but we do not have any idea about what it might be.

interrogatives discussed in the literature and show that we still fail to find a proper account from such considerations. In section 4, we propose our pragmatic account for the indefiniteness effect based on the idea that indefinites in anti-indefinite constructions tend to take wide scope, which results in a failure to express coherent answer-requesting speech acts. Due to space limitations, we shall skip all formalism that we find inessential (though nonetheless possibly helpful) in the present paper.

To see why the effect resists the regimentation of existing theories of interrogatives (according to standard accounts in the literature), we consider the syntactic, semantic, and pragmatic aspects of interrogatives corresponding to interrogatives as sentences, questions, and speech acts, respectively. In the next section, we begin with their syntax.

## 2 The Syntactic Aspect

To begin with a possible syntactic approach to the indefiniteness effect, we see no reason to think the infelicity of indefinites in these constructions is the result of any syntactic feature of anti-indefinite constructions. Although we can imagine a proposal that accounts for the indefiniteness effect by assuming that anti-indefinite constructions are incompatible with the [+indefinite] feature, this proposal is relatively *ad hoc*, and fails to account for the related felicitous interpretations of indefinites in (2b).

We would like to further suggest that no syntactic theory should even try to account for the indefiniteness effect, especially in a transformational grammar. It is generally assumed in transformational theories that interrogatives are constructed through movement from declaratives.<sup>6</sup> If this is so, then once a declarative sentence is grammatical, it should be that the interrogative generated from it is also grammatical. For example, since an indicative sentence like *John is ok with a man* is grammatical, the grammaticality of the interrogative *Is John ok with a man?* should be guaranteed. If the indefiniteness effect can be accounted for by syntax, a syntactic theory will need to show that the infelicity of *Is John ok with a man?* is its ungrammaticality, which seems to be quite implausible.

Even if a theory is willing to accept that *Is John ok with a man?* is ungrammatical, it also needs at the same time to account for the felicity of (7).

(7) I do not know whether John is ok with a student.

A syntactic account for the indefiniteness effect should tell us why the indefiniteness effect disappears when *Is John ok with a man?* turns into an indirect interrogative and is embedded. We do not see any simple, non-stipulative way of doing this.

Another reason to resist a syntactic account for the indefiniteness effect comes from the heterogeneity of anti-indefinite constructions. Some anti-indefinite constructions can be base generated, e.g. *Is John ok with a man?*, but some of them

<sup>6</sup> Though this may not hold for recent Minimalist theories.

do not seem to be base generated, e.g. *What is wrong with a man?* and *What do you think about a man?*<sup>7</sup>

### 3 The Semantic Aspect

Now let us consider the semantic aspect of the indefiniteness effect. Following the standard semantic analysis of interrogatives in the literature, we take the meaning of interrogatives, questions, to be identified as their answers. We shall start our semantic consideration of the indefiniteness effect from narrow scope, wide scope, and pair-list interpretations. As we shall show, no previously mentioned interpretation of interrogatives is suitable to account for the indefiniteness effect. Of course, there are other semantic theories concerning the interpretation of quantifiers in interrogatives (cf. Higginbotham & May 1981 and Chierchia 1993), but we shall skip them in this paper since we fail to see their significance as a solution for the indefiniteness effect.

#### *Narrow Scope Interpretations*

To begin with, consider the interpretation of quantifiers taking narrow scope in interrogatives that exhibit the indefiniteness effect. This type of interpretations is characterized by answers such as ‘every man is in New York’ for (8a) and ‘a man is in New York’ for (9a). Formally, (8a) and (9a) receive the narrow scope readings (8b,c) and (9b,c) from the formalism in Karttunen (1977) and Groenendijk & Stokhof (1984), respectively.

- (8) a. Where is every man?  
 b.  $\lambda p.\exists y(\forall p \wedge p = \wedge \forall x(man(x) \rightarrow at(x, y)))$   
 c.  $?y.\forall x(man(x) \rightarrow at(x, y))$
- (9) a. \*Where is a man?  
 b.  $\lambda p.\exists y(\forall p \wedge p = \wedge \exists x(man(x) \wedge at(x, y)))$   
 c.  $?y.\exists x(man(x) \wedge at(x, y))$

With respect to the Karttunen-style analysis and the Groenendijk & Stokhof-style analysis, both narrow-scope readings for (8a) and (9a) are felicitous. Moreover, if we take a closer look into the interpretations of (9b,c), we shall find that they represent the interpretation of the interrogative *Where is there a man?* We do not deny that the narrow scope reading for (9a) is available to some degree, but we take it that it is not the intended interpretation for (9a) because, although the logical forms present no difficulties in construction, still the persistent intuition is that the construction is odd.

<sup>7</sup> Some constructions do not like to have indefinites in subject positions. For example, *A man is John* is grammatical, but still sounds weird. One may suggest that the anti-indefinite constructions are such constructions that disprefer indefinites. We do not take this suggestion as impossible, but we find it difficult to see a common property among various anti-indefinite constructions.

*Wide Scope Interpretations*

The second possibility is to consider the wide scope interpretation for the quantifiers in (8a) and (9a), paraphrased as (10a,b) respectively, which takes the form of so-called *quantifying into questions*.<sup>8</sup>

- (10)a. For every man  $x$ , where is  $x$ ?  
 b. For a man  $x$ , where is  $x$ ?

As indicated in Krifka (2001), possible Karttunen-style analyses of (10a) are (10a-1) and (10a-2) and (10b) as (10b-1) and (10b-2), but they all fail to be correct.

- (10a-1)  $\forall x(man(x) \rightarrow \lambda p.\exists y(\bigvee p \wedge p = \wedge at(x, y)))$
- (10a-2)  $\lambda p.\forall x(man(x) \rightarrow \exists y(\bigvee p \wedge p = \wedge at(x, y)))$
- (10b-1)  $\exists x(man(x) \wedge \lambda p.\exists y(\bigvee p \wedge p = \wedge at(x, y)))$
- (10b-2)  $\lambda p.\exists x(man(x) \wedge \exists y(\bigvee p \wedge p = \wedge at(x, y)))$

In (10a-1) and (10b-1), the consequent of  $\rightarrow$  and  $\wedge$  does not have the right type  $t$ . On the other hand, (10a-2) does give us a suitable interpretation: however, it denotes the empty set, if there is more than one man.<sup>9</sup> (10b-2) provides an interpretation which is quite similar to the narrow scope interpretation except that both man and location must be specified. So it is clear that, even if it is the case that the indefiniteness effect arises from quantifying into questions, Karttunen-style analyses do not account for it since, on this analysis, both definites and indefinites are infelicitous in anti-indefinite constructions, *qua* (10a-1) and (10b-1), or they are both felicitous in anti-indefinite constructions, *qua* (10a-2) and (10b-2).

On the other hand, according to Groenendijk & Stokhof-style analysis, (10a) receives (10a-3) and (10b) receives (10b-3) as their interpretations.

- (10a-3)  $\lambda j.\lambda i.\forall y(man(j)(y) \rightarrow \lambda x.(at(i)(x)(y)) = \lambda x.(at(j)(x)(y)))$
- (10b-3)  $\lambda j.\lambda i.\exists y(man(j)(y) \wedge \lambda x.(at(i)(x)(y)) = \lambda x.(at(j)(x)(y)))$

While (10a-3) gives a sensible interpretation, (10b-3) fails to give us the correct interpretation for (10b): we do not get a partition of possible worlds unless there is exactly one man in the model.

The Groenendijk & Stokhof-style analysis for quantifying into questions may cause people to think that we have an account for the indefiniteness effect: definites are allowed for quantifying into questions, but indefinites are not. This suggestion is correct in a sense, but there are two worries concerning it. First, according to the proposal, the wide scope interpretation for *Where are most men?* should be infelicitous, since Groenendijk & Stokhof-style analysis predicts

<sup>8</sup> Our informal analysis of quantifying into questions is adopted from Krifka (2001).

<sup>9</sup> Consider two men  $m_1$  and  $m_2$ . (10a-2) =  $\{p | \exists y(\bigvee p \wedge p = \wedge at(m_1, y)) \wedge \exists y(\bigvee p \wedge p = \wedge at(m_2, y))\}$ , which is the empty set. Krifka (2001) wrongly states that (10a-2) is the empty set unless every man is in the same place. This mistake was first pointed out to us by Bernhard Schwarz.

that it does not form a partition of worlds. This prediction fails to be correct. Second, in this account, there is nothing specifically mentioned concerning the anti-indefinite constructions, which are after all the reason that the indefiniteness effect arises.

Moreover, Groenendijk & Stokhof (1984) takes both (10a,b) to be felicitous, so they further introduce so-called *choice readings* (10a-4,b-4) for both (10a,b).

- (10a-4)  $\lambda Q.\exists W(\text{W is a witness set of [every man]}\wedge$   
 $Q = \lambda j.\lambda i.([\lambda y.\lambda x.W(y) \wedge at(i)(x, y)] = [\lambda y.\lambda x.W(y) \wedge at(j)(x, y)]))$
- (10b-4)  $\lambda Q.\exists W(\text{W is a witness set of [a man]}\wedge$   
 $Q = \lambda j.\lambda i.([\lambda y.\lambda x.W(y) \wedge at(i)(x, y)] = [\lambda y.\lambda x.W(y) \wedge at(j)(x, y)]))$

According to Barwise & Cooper (1981), a set  $A$  is a witness set of a quantifier  $D(B)$  iff  $A \subseteq B$  and  $D(B)(A)$ , so every choice reading is a set of equivalence relations. Both (10a,b) receive felicitous choice readings, unless the set of men is empty. If the set of men is empty, then (10a,b) both denote the empty set, which does not give rise to a suitable restricted question.<sup>10</sup> Informally, the choice reading for (10b), (10b-4) (for instance) can be understood as saying: *Pick a man  $x$ , where is he?*<sup>11</sup> Again, since both definite and indefinites are available for choice readings, we still lack an account for the indefiniteness effect.

#### *Pair-List Readings*

Our last consideration is the availability of the pair-list readings for (8a) and (9a). While it is clear that indefinites do not have pair-list readings, definites like *most men* also fail to have pair-list readings, e.g. (11a,b) (assuming that there are only three guests).

- (11a. Which dish did most guests make?  
 b. \*Al the pasta, and Bill the salad. (Krifka 2001)

So the indefiniteness effect cannot be simply accounted for by the fact that pair-list readings are unavailable for indefinites in general. Moreover, the unavailability of pair-list readings for indefinites is a general feature of many interrogatives. If the unavailability of pair-list readings accounted for the indefiniteness effect, we would expect the indefiniteness effect to be even more pervasive than we have seen it to be.

## 4 The Pragmatic Aspect

Neither syntactic nor semantic considerations led to a reasonable explanation of the indefiniteness effect. Therefore we would like to turn our focus now to the pragmatic aspect of interrogatives.

<sup>10</sup> Why does an empty set of equivalence relation not give rise to a suitable question interpretation? We shall come back to this in section 4.

<sup>11</sup> To capture this intuition, one more constraint should be added into the definition of witness sets for  $a(B)$ :  $A$  is a witness set of  $a(B)$  only if  $|A| = 1$ .

*The Pragmatic Reconsideration of the Effect*

We shall begin with a reconsideration of anti-indefinite constructions in the context of conversations. First, consider the following dialogue between two agents.

- (12)a. A: Where is a man?  
 b. B: Wait a minute, who are you asking about?  
 c. A: I am asking about the man who stole my computer.  
 d. B: He is at the police station now.

(12a) sounds infelicitous out of context, but, as shown by (12), it improves in conversation.

Consider what the conversation (12) tells us. The felicity of (12b) cannot come from the narrow scope interpretation of (12a) asking *Where is there a man?* Otherwise, (12d) would already be a direct partial answer for (12a). Instead, (12b) reflects the agent B's inability to answer A's question (12a). We can conclude several things from the conversation (12). First, the felicity of (12a) in a conversational context indicates that the infelicity of (12a) by itself, as we have suggested, has nothing to do with the semantic interpretation of (12a); so it is semantically interpretable. Second, we propose that the out of conversation infelicity of (12a) arises from B's inability to answer A's question without further information concerning A's question. This indicates that the out of conversation infelicity of (12a) is a pragmatic consequence rather than a semantic consequence, i.e. (12a) cannot be answered without further information. Since we suppose that the out of conversation infelicity of (12a) comes from pragmatics, this result does not conflict with the robust intuition in the literature that the meaning of an interrogative is characterized by its answers.

Further evidence for the idea that the infelicity of (12a) arises from needing further elaboration on the question comes from the following two cases. First, consider the conversation (13).

- (13)a. A: Where is a certain man?  
 b. B: Wait a minute, who are you asking about?  
 c. A: I am asking about the man who stole my computer.  
 d. B: He is at the police station now.

(13a) alone sounds infelicitous. Moreover, it does not help to take (13a) on the existential interpretation *Where is there a certain man?*, which still sounds infelicitous. A proper understanding of (13) is to take (13a) as a semantically felicitous question, but a pragmatically unanswerable one: the specific adjective *certain* indicate that the question asker has someone specific in mind, but the listener cannot answer the question unless what's in the speaker's mind is further specified explicitly. Once what the speaker has in mind is further specified, e.g. as in (13c), the listener can answer the question.

On the other hand, we can consider the conversation (14) as a comparison. Assume that the domain of quantification is not under discussion here.

- (14)a. A: Where is every man?  
 b. B: \*Wait a minute, who are you asking about?

The infelicity of (14b) can be understood as showing that (14a) is both semantically felicitous and pragmatically clear, so it is improper to ask for information for further specification.

To summarize what we have said, we suggest that the indefiniteness effect arises from a need for further information in order to answer the question under certain semantic interpretations of interrogatives. Or, in other words, the indefiniteness effect arises from the fact that some questions fail to be a proper request for answers on certain interpretations, unless they are further specified.

Our proposal can only make sense if it can be extended to determiners other than *a* and *every*. Consider, first, other indefinite determiners.

- (15)a. A: Where are two men/at least two men/at most two/no men/neither men?  
 b. B: Wait a minute, who are you asking about?

(15a,b) indicates that indefinite determiners in general pass the test for information specification of questions.

On the other hand, consider the following definite determiners.

- (16)a. A: Where is (are) the man/(you/the men/the three men)?  
 b. B: \*Wait a minute, who are you asking about?

As shown by (16a,b), determiners for definites in general cannot serve as a basis for further informational specification.

#### *A Formal Account*

Our formal account for the indefiniteness effect based on the previous observation has two components: first, quantifiers in anti-indefinite type interrogatives tend to receive the wide scope interpretations, which are assumed in the case of indefinites to be captured by choice interpretations, which are sets of equivalence relations, since indefinites may have multiple witness sets. Second, since an equivalence relation represents a speech act for requesting answers, a non-singleton set of equivalence relations is *pragmatically inappropriate* since it either represents *multiple (concurrent)* question asking speech acts (for sets that have cardinality more than one, e.g. for the determiner *a*), or does not even ask a question at all (for sets with cardinality zero, e.g. for the determiner *no*).

The first part of the proposal concerns the tendency of indefinites to take wide scope in anti-indefinite constructions. Take *Where is a man?* as an example. This is infelicitous, but this shouldn't be the case if the indefinite gets narrow scope. One reason for the non-salience of the *Where is there a man?* interpretation is, we think, that the interpretation has a better way to be represented, i.e. the unambiguous utterance *Where is there a man?*. Clearly this is a better way to ask a question about where there is a man than *Where is a man?*. By the Gricean principle of Manner, if the speaker is really interested in asking where

there is a man, he would use *Where is there a man?* rather than *Where is a man?*. The same idea applies to *Is John ok with a man?*; there, the narrow scope interpretation can be better asked by *Is there a man such that John is ok with?*<sup>12</sup>

Further, it is difficult to provide a narrow scope interpretation for indefinites in some anti-indefinite constructions. For example, what does the narrow scope interpretation for *What is wrong with a man?* mean? It cannot be the infelicitous *What is wrong with that there is a man?* Similarly, the infelicitous *What do you think about that there is a man?* does not represent the narrow scope reading of *What do you think about a man?* We think that for the above two cases, no narrow scope readings are available.<sup>13</sup> This explains why no felicitous interpretation is available for *What is wrong with a man?*, as indicated in section 1. We may compare the above two cases with the interrogative *which dish did a guest order?*, which has a felicitous narrow scope interpretation as *Which dish is such that there is a guest who ordered it?*

For the second part of our proposal, we first consider three types of quantifiers with respect to choice interpretations. The first type of quantifiers are those which can have multiple witness sets, e.g. *a man*, *some men*, etc. Their corresponding choice readings are sets of equivalence relations which can have cardinality more than one. The second type of quantifiers are those which cannot have any witness sets, e.g. *no men*, *neither men*, etc. Their corresponding choice readings are the sets of equivalence relations which can only have cardinality zero. The third type of quantifiers are those which can have at most one witness set, e.g. *every men*, *the men*, etc. Their corresponding choice readings are the sets of equivalence relations which can only have cardinality one or zero. With respect to the indefiniteness effect, we can see that the first and the second type have infelicitous occurrences in anti-indefinite constructions, but the third type are felicitous there. The only exceptional case involves quantifiers with the determiner *most*, e.g. *most men*, which can have multiple witness sets and so belongs to the first type of quantifiers, but has felicitous occurrences in anti-indefinite constructions. We shall deal with this case later.

The issue is now how the pragmatic felicity of choice readings is related to the cardinality of their corresponding sets of equivalence relations. Our proposal

<sup>12</sup> Rick Nouwen (p.c.) asks us about quantifiers like *at least n students*, which may have a tendency to take narrow scope. If this tendency is real, there is a difficulty for our proposal in that it will not extend to such quantifiers. We are not sure about this; we seem to be able to get wide scope readings with respect to universal quantifiers and modals without much difficulty. For example, it is quite natural to give a wide scope interpretation for *at least three papers* in the sentence *every student should read at least three papers assigned by the professor*. If there is such a tendency for *at least n students* to take narrow scope, however, it is clearly pragmatic in nature, and thus overridable; we guess that anti-indefinite constructions are contexts in which it does in fact get overridden, again for pragmatic reasons.

<sup>13</sup> One common feature for these anti-indefinite constructions is that the quantifiers are the objects of prepositions. We suspect that this feature may have something to do with the tendency of such quantifiers to take wide scope.

is to assume that every equivalence relation represents a speech act of requesting answers. Three cases must be considered.

*First Case.* Consider the first case, in which the set of equivalence relations arises from more than one witness set and has cardinality more than one. It represents what we shall call a group of *concurrent* questions, where the speaker is actually asking many questions at the same time. For example, assume that there are exactly three men, John, Jack, and Bill. According to (9d-1), (9a) is actually asking as many questions at the same time (concurrently) as there are different witness sets for *a man*.<sup>14</sup> Thus in our situation the question is asking *Where is John?*, *Where is Jack?*, and *Where is Bill?* at the same time. Even though there is no semantic difficulty with asking many questions concurrently, the listener cannot identify which question the speaker is actually asking and so cannot determine how to answer the question in order to satisfy the request for an answer. This leads to pragmatic inappropriateness. Note that it would be a mistake to answer all of the concurrently asked questions, since this would be answering the question *Where is every man?*.

*Second Case.* The second case concerns choice readings whose corresponding sets of equivalence relations arise from no witness sets at all and so have cardinality zero. Again, assume that there are exactly three men, John, Jack, and Bill. According to this scenario, as well as to other scenario, the choice interpretation for *Where is no man?* is an empty set of equivalence relations. Given that every equivalence relation represents a speech act for requesting answers, a question that requests nothing is taken to be pragmatically infelicitous.

*Third Case.* The third case concerns choice readings whose corresponding set of equivalence relations arises from exactly one witness set and so has cardinality one. Again, assume that there are exactly three men, John, Jack, and Bill. According to this scenario, the choice interpretation for *Where is every man?* is a set of equivalence relations which has cardinality one, so only one request for answers is represented. This is a pragmatically felicitous question.

The above consideration of three cases corresponds nicely with the discussion about question acts in Krifka (2001), based on the definition 1.

**Definition 1. Question Acts Transformation**

1.  $(q_1 \& q_2) \mapsto \{answer(q_1) \cup answer(q_2)\}$
2.  $(q_1 \vee q_2) \mapsto \{answer(q) : q \in \{q_1, q_2\}\}$

According to definition 1, every conjunctive question act corresponds to a set of equivalence relations with cardinality one, and every disjunctive question act corresponds to a set of equivalence relation with cardinality more than one. Of course, we can then take a null question act to correspond to a a set of equivalence relations with cardinality zero. As argued in Krifka (2001) and above, conjunctive question acts are felicitous, but disjunctive and null questions acts are infelicitous. This is exactly parallel to our previous analysis for the three

<sup>14</sup> Remember we define a witness set  $A$  of a quantifier  $a(B)$  as a set such that (i)  $A \subseteq B$ , (ii)  $a(B)(A)$ , (iii)  $|A| = 1$ .

cases. A crucial difference between our proposal and Krifka's proposal is that we would like to take the (in)felicity of question acts to be pragmatic rather than semantic. This is a debatable issue, but we shall not go into it further here.

Now we come back to the first type of quantifier. Depending on the model of interpretations, such quantifiers may have zero, one, or more than one witness sets. However, we take situations in which there is more than one witness set to be salient in a conversation. Otherwise, the conversation would be pretty bizarre. For example, it is pretty odd to say *A man is happy* if everyone involved in the conversation knows that there is only one man in the world. So we take the choice readings corresponding to the first type of quantifier to be pragmatically infelicitous in conversation. The choice readings corresponding to the second type of quantifiers are also pragmatically infelicitous, since the corresponding set of equivalence relation is always empty. The choice readings corresponding to the third type of quantifiers are pragmatically felicitous, since the salient corresponding set of equivalence relations has cardinality one, even though there is a non-salient possibility that the set has cardinality zero. More generally, in order for a question to be answerable, the set of equivalence relations must be a singleton. Otherwise, the listener has no way to identify an equivalence relation and then provide a proper answer.

Now we can provide an account for the conversation (12) based on our proposal. With wide scope taking indefinites, (12a) represents a set of equivalence relations. Nonetheless, B cannot answer the question (12a), for he cannot identify an equivalence relation as a basis for providing an answer. Instead, B's (12b) asks A to identify the proper equivalence relation for asking an answer. Then A's (12c) signifies the proper equivalence relation, and at the same time eliminates other equivalence relations. As a result, B has a way to answer A's question: (12d). But keep in mind that B's answer (12d) is not an answer for (12a). Rather, it is an answer to for the elaborated question *Where is a man? I am asking about the man who stole my computer*. The elaboration here is in fact an instance of backgrounding in the sense of Asher & Lascarides (1998, 2003).

There are some cases in need of further attention: the determiner *most*, generic interpretations of indefinites, and embedded indirect interrogatives.

*The Case of Most*. When definite quantifiers containing the determiner *most* (e.g. *most men*) take wide scope over anti-indefinite constructions, they can generate sets of equivalence relations with cardinality greater than one, since they can have multiple witnesses. Therefore, our proposal seems to predicts that quantifiers like *most men* should be infelicitous in anti-indefinite constructions. Nonetheless, *most men* has felicitous occurrences in anti-indefinite constructions as in (1a) and (2b). This seems to be a problem for us.

In fact, though, the situation is more complex. Even though *most men* has infelicitous occurrences in anti-indefinite constructions as in (1a) and (2b), unlike other definite quantifiers like *every man* it passes the *wait a minute* test, as shown by the conversation (17). Here the model contains only three men, John, Bob, and Jack).

(17)a. A: Where are most men?

- b. B: Wait a minute, who are you asking about?
- c. A: I am asking about John and Bob.
- d. B: John, New Your. Bob, Amsterdam.

The felicitous conversation (17) seems to indicate that, according to our proposal, *most men* should have infelicitous occurrences in anti-indefinite constructions.

We propose that there is an interpretation for *Where are most men?* concerning a certain set of men, but it is not a salient interpretation. We have a intuitively good answer by answering that most men are in New York for the narrow scope interpretation of *Where are most men?*; thus the narrow scope reading is salient. If right, this idea predicts that both (18b,b-1) are intuitively inappropriate answers for (18a).

- (18)a. Where are most men?
- b. \*They are at New York. (concerning a certain set of men)
- b-1.\*Bob, New York. John, Amsterdam. (for pair-list reading)

As shown by (18), the prediction is correct. On the other hand, in the conversation (17), the question (17b) makes the non-salient, or even generally infelicitous, interpretation become salient. This accounts for the felicity of the conversation.

We still need to answer why the narrow scope readings of *most men* in anti-indefinite constructions are salient, but the wide scope readings of *most men* are not. Again, we appeal to the Gricean principle of Manner. If the speaker is interested in asking where a certain set of men is, the question *where are most men?* does not convey his intention fully. On the other hand, if a set of men can be singled out, then the reading of *most men* concerning a certain set of men will be available. This, we believe, is what is going on in (17).

*The Case of Generic Interpretations.* Now we consider how the generic interpretation of indefinites licenses indefinites in anti-indefinite constructions, as shown by (5a,b). Our account is based on the idea that the cases for multiple witness sets do not arise for generic interpretation of indefinites. For example, generic interpretations of indefinites in anti-indefiniteness constructions like *What is wrong with a man with two wives?* receive an interpretation similar to the narrow scope interpretation of *What is wrong with every man with two wives?*. The same is true of *Are you ok with a man with two mistresses?* with the narrow scope interpretation *Are you ok with every man with two mistresses?*, as well as for *What does a woman want?* with the narrow scope interpretation *What does every woman want?*

*The Case of Embedded Indirect Interrogatives.* Our last consideration involves anti-indefinite constructions embedded as indirect interrogatives.

- (19)a. I know where a man is.
- b. I know where every man is.

Both the determiner *a* and the determiner *every* are felicitous in (19a,b). But keep in mind that the felicity of *a* in (19a) does not necessarily come from the interpretation *I know where there is a man*. Another available interpretation for

(19a) concerns a certain man: for a certain man, I know where he is, as shown by (19a-1).

- (19a-1) For a man  $x$ , I know where  $x$  is.

In case we have a wide scope indefinite interpretation for (19a), as shown by (19a-1), we do not form a set of equivalence relations for the embedded question, but an equivalence relation with respect to a certain man. Under this semantic interpretation, (19a-1) does not actually request answers. As we have argued, the problem with anti-indefinite constructions is pragmatic and involves the speech act of questioning; thus, there will be nothing wrong with a wide scope indefinite interpretation of (19a), which accounts for the felicity of (19a-1). Simply put, embedded indirect interrogatives are not speech acts for requesting answers.

## 5 Concluding Remarks

Some interesting points concerning the investigation of interrogatives follow from our proposal for the indefiniteness effect. First, an investigation of interrogatives is complicated by the interaction among syntactic, semantic, and pragmatic aspects of interrogatives: a request for answers is conveyed by certain linguistic meanings under certain syntactic constructions. When we consider the infelicity of an interrogative, it is essential but difficult to know which aspect the infelicity follows from. What we propose in this paper is that the indefiniteness effect results from the pragmatic aspect rather than the syntactic and semantic aspects of interrogatives: (a) indefinites in anti-indefinite constructions tend to take wide scope, and (b) wide scope taking quantifiers over Wh-terms can be understood as quantifying into questions, and receive choice interpretations which are pragmatically inappropriate for indefinites. Essentially, the indefiniteness effect can be understood as arising from the ability of indefinites to have multiple witness sets, or no witness sets (for determiner *no*).

Careful readers may have noticed that our proposal has a close relationship with the issue concerning pair-list interpretations, if we take pair-list readings to arise from quantifying into questions. The idea is roughly this: by definition 1, we can convert Krifka's account for pair-list interpretations into an account for pair-list interpretations based on choice interpretations, by making use of question acts. As indicated earlier, a crucial difference is that this new sort of account is pragmatically oriented, rather than semantically oriented as in Krifka (2001). On the other hand, we also believe that our understanding on scope taking of quantifiers in interrogatives can also be applied to account for other quantifier related phenomena concerning interrogatives, for example, the *simplest hard problem* from Higginbotham concerning the infelicity of *Do you see the man in a red hat?* (cf. Higginbotham 2006). We shall also leave all these issues for future research.

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