Illusive Scope of Universal Quantifiers[*]

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It is widely believed that existential quantifiers can bring about the semantic effects of a scope which is wider than their actual syntactic scope (See Fodor & Sag (1982), Cresti (1995), Kratzer (1995), Reinhart (1995) and Winter (1995), among many others.) On the other hand, it is assumed that the syntactic scope of universal quantifiers can be determined unequivocally by the semantics. This paper shows that this second assumption is wrong; universal quantifiers can also bring about scope illusions, though in a very specific environment. In particular, we argue that in the environment of generic tense, universal quantifiers can show the semantic effects of a scope which is wider than the one that is actually realized at LF. Our argument has four steps. First, we show that in generic contexts, universal quantifiers escape standard "scope-islands" (Section 1). Second, we show how the effects of wide scope in generic contexts can be achieved without syntactic wide scope (Section 2.1). Third, we show that this result is actually forced on us, once we take seriously certain independent issues concerning the interpretation of generic tense (Sections 2.2 - 2.4). Finally, the semantics of generic tense and, in particular, its interaction with focus, will yield some intricate new predictions, which, as we show, are borne out (Sections 3 - 5).

1 . Unexpected Wide Scope

Universal quantifiers are very restricted in their capacity to take wide scope. In certain environments, the scope of universal quantifiers is clause-bound. In other environments, it is rigidly determined by the position of quantifiers at Surface Structure. In this section, we will see that both restrictions seem to be obviated in the context of generic tense.

1.1. Clause-Boundedness

In cases where scope is not rigid, it is clause-bound.[1] This is exemplified by the sentences in (1). Thus, for (1a) to be true, there must be one guide who ensured that all the

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[1]This claim is not uncontroversial (cf. May (1988), Reinhart (1991)). However, the controversy doesn't bear on the point made in this paper. For this paper, all that matters is that constructions which appear to show "clause-boundedness" distinguish between generic and episodic tense.

tours were fun. The guides cannot vary with the tours, an observation which indicates that the embedded universal quantifier cannot take scope over the matrix existential.

(1)   a. Yesterday, [a guide]$_\exists$ ensured [$_{CP}$ that [every tour to the Louvre]$_\forall$ was fun].
                                                                                  ($\exists > \forall$, *$\forall > \exists$)
         b. When we entered the conference, [a grad student]$_\exists$ was checking [$_{CP}$ that [everybody]$_\forall$ had a badge].   ($\exists > \forall$, *$\forall > \exists$)

         Consider, however, the generic sentences in (2). Ignoring tense, these sentences are identical to their counterparts in (1). Nevertheless, it seems that the restriction on scope is not exemplified by the sentences in (2). Thus, (2a) could serve as a description of a travel agency in which it is customary that whenever there is a tour to the Louvre there is a guide that ensures that the tour is fun. The guides can vary with the tours, an observation which could conceivably indicate that the embedded universal quantifier can take scope over the matrix existential.

(2)   a. In general, [a guide]$_\exists$ ensures [$_{CP}$ that [every tour to the Louvre]$_\forall$ is fun].
                                                                                  ($\exists > \forall$, $\forall > \exists$)[2]
         b. At linguistic conferences, [a grad student]$_\exists$ checks [$_{CP}$ that [everybody]$_\forall$ has a badge].   ($\exists > \forall$, $\forall > \exists$)[3]

1.2. Double Objects

         In English ditransitives, the relative scope of the indirect object and the direct object is fixed (Larson 1990, attributed to David Lebeaux). This is exemplified by the sentences in (3). Thus (3a) could be true only if there is a tourist who was given all the leaflets. The tourists cannot vary with the leaflets, an observation which indicates that the universal quantifier must have narrow scope relative to the existential which c-commands it at surface structure.

(3)   a. Yesterday, I gave [a tourist]$_\exists$ [every leaflet]$_\forall$.   ($\exists > \forall$, *$\forall > \exists$)
         b. Last night, the waiter served [a foreigner]$_\exists$ [every meal]$_\forall$.   ($\exists > \forall$, *$\forall > \exists$)

         This scope rigidity seems to be obviated in generic contexts. In the sentences in (4), which form minimal pairs with the sentences in (3), we can get the semantic effects of wide scope for the universal quantifier. (4a), for example, could be true as a description of my tendency to give all of my leaflets to tourists. The tourists can vary with respect to the leaflets, an option which is standardly taken to be an indication of the availability of wide scope for the universal quantifier.

(4)   a. In general, I give [a tourist]$_\exists$ [every leaflet]$_\forall$.   ($\exists > \forall$, $\forall > \exists$)
         b. In this restaurant, the waiter serves [a foreigner]$_\exists$ [every meal]$_\forall$.($\exists > \forall$, $\forall > \exists$)

1.3. VP-Ellipsis

         Certain VP-ellipsis constructions bring about scope rigidity. In sentences involving coordination, the scope relation in the first conjunct is fixed (determined by Surface

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[2]The notation '$\forall > \exists$' is meant to indicate that we get the semantic effects of wide scope for the universal quantifier (relative to the existential quantifier). It does not mean to indicate that the universal quantifier can *actually* have syntactic wide scope. As indicated in the introductory remarks, we will argue that the appearance of wide scope for the universal quantifier in sentences such as (2) is only an illusion.

[3]As we will see in Section 3.1., the judgments in (2), as well as in all of the generic sentences in this section, are affected by the placement of focal stress. At this point, we suggest that the reader test the judgments when focal stress is placed on the existential quantifier.

Structure c-command), if the subject in the second conjunct is a proper name (Sag (1976), Williams (1977); see Fox (1995), for a precise characterization of the conditions for scope rigidity in ellipsis constructions). This is exemplified by the sentences in (5).

(5)   a.   [One boy]$_\exists$ admires [every teacher]$_\forall$, and Mary does, too.   ($\exists > \forall$, *$\forall > \exists$)
      b.   At five o'clock, [a second year student]$_\exists$ talked to [every incoming student]$_\forall$, and at seven o'clock, Wayne did.   ($\exists > \forall$, *$\forall > \exists$)

Once again, the restriction seems to be obviated in generic contexts, as we see by the sentences in (6). Take (6a), noted by Fiengo & May (1994:230). In this sentence, the guides can vary with the tours, an observation which might indicate that the universal quantifier in object position can have wide scope with respect to the existential subject.

(6)   a.   [A guide]$_\exists$ accompanies [every tour to the Eiffel Tower]$_\forall$, and Jeanne does, too.   ($\exists > \forall$, $\forall > \exists$)
      b.   At MIT, [a second year student]$_\exists$ talks to [every incoming student]$_\forall$ and, Wayne does, too.   ($\exists > \forall$, $\forall > \exists$)

1.4. Rigid Scope Languages

In certain languages, scope is rigid in most constructions. In Japanese and Korean, for example, the Surface Structure c-command relations of non-scrambled sentences determine the scope relations in a rigid way (Kuno (1973), Hoji (1985); for related issues, see Aoun and Li (1993)). This is exemplified by the sentences in (7). In (7a), from Japanese, the children can't vary with the doors, and in (8a), from Korean, the grad-students can't vary with the freshmen.

(7)   a.   Ima, [hitori-no kodomo-ga]$_\exists$ [subete-no doa-o]$_\forall$ tataiteiru.   (Japanese)
           Now, one$_{GEN}$ child$_{NOM}$ all$_{GEN}$ door(s)$_{ACC}$ is knocking
           'Right now, one child is knocking on all doors.'   ($\exists > \forall$, *$\forall > \exists$)
      b.   ece   pati-ese, [tehakwənsəŋ-i]$_\exists$ [motɨn sinipseŋ-ɨl]$_\forall$ manassta.   (Korean)
           Yesterday party-at grad-student$_{NOM}$ every freshman$_{ACC}$ met.
           'Yesterday at the party, a grad-student met every freshman.'   ($\exists > \forall$, *$\forall > \exists$)

Here again, the effects of the restriction seem to disappear in generic contexts. Thus in (8a), the children are allowed to vary with the doors, and in (8b), the grad-students can vary with the freshmen.

(8)   a.   geemu-de-wa, [hitori-no kodomo-ga]$_\exists$ [subete-no doa-o]$_\forall$ tataku. (Japanese)
           game-in$_{TOP}$,   one$_{GEN}$ child$_{NOM}$ all$_{GEN}$ doors$_{ACC}$ knocks
           'In the game, one child knocks on all doors.'   ($\exists > \forall$, $\forall > \exists$)[4]
      b.   MIT-ese (nɨn), [tehakwənseŋ-i]$_\exists$ [motɨn sinipseŋ-ɨl]$_\forall$ manassta.   (Korean)
           At MIT (TOP) grad-student$_{NOM}$ every freshman$_{ACC}$ meets.
           'At MIT, a grad-student meets every freshman.'   ($\exists > \forall$, $\forall > \exists$)

2. An Explanation

In the previous section, we saw that the restrictions on the scope of universal quantifiers appear to be obviated in generic contexts. There are two conceivable explanations for this observation. On the one hand, it is possible that the appearance of obviation is genuine, and that something about generic contexts nullifies the restrictions.

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[4]For some Japanese speakers, the determiner *hitori* must be specific. These speaker do not get the judgment in (8a). However, they do get this judgment (along with the contrast with the episodic sentence) once *hitori* is replaced by the non-specific *hutari* (two) (Miyagawa, p.c.).

On the other hand, it is possible that the appearance is an illusion, and that something about generic contexts allows universal quantifiers to show the semantic effects of a scope which is wider that the one that is actually realized at LF. We will argue for the second possibility. In Section 2.1, we show that there is a way to think about the semantic contribution of generic tense, from which it will follow that this tense should bring about illusive scope for universal quantifiers. In other words, there is a way to think about generic tense which will allow us to keep a simple theory of the syntactic constraints on scope. In Sections 2.2-2.4, we will show that this is the correct way to think about generic tense. In Section 3, we will discuss some new predictions of our account. As we will see, the first of these predictions provides a knock-down argument against potential attempts to relax syntactic scope restrictions in generic contexts.

2.1. The Basic Idea

Consider the episodic double object construction in (3a), repeated below as (9). As mentioned, this sentence shows scope rigidity: the existential quantifier must have wide scope relative to the universal quantifier. This means that the sentence could be true only if there is a single tourist who gets all of the leaflets. In other words, the sentence would be false in a situation such as that depicted in (P1), where every leaflet is given to a different tourist, and there is no single tourist who receives all of the leaflets.

(9)   Yesterday, I gave [a tourist]$_\exists$ [every leaflet]$_\forall$.   ($\exists > \forall$, $*\forall > \exists$)

(P1)
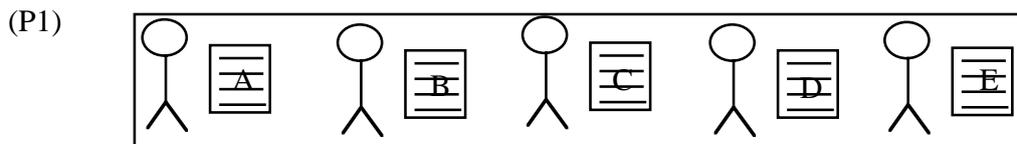
Example (9) shows that for episodic sentences there is a grammatical restriction that keeps the scope of the two objects in a double object construction fixed. The question is whether the restriction could be claimed to hold for generic sentences as well. On the face of it, the generic double object construction in (10 = (4a)) seems to indicate that the answer is no. As mentioned, in this sentence, scope rigidity seems to be obviated. That is to say, this sentence seems to be true as a description of the situation depicted in (P1). We would like to suggest that appearances could be misleading. There is a way to think about the semantics of generic sentences from which the observation would follow, despite the scope rigidity in double object constructions.

(10)   In general, I give [a tourist]$_\exists$ [every leaflet]$_\forall$.   ($\exists > \forall$, $\forall > \exists$)

Let us start with the observation that (10), like any generic sentence, describes a general tendency. Intuitively speaking, it asserts that whenever we look at certain relevant portions of the world, we tend to see that they have a certain property. Suppose that scope is rigid in (10), just as it is in (9). Under this assumption, (10) asserts that whenever we look at the relevant portions of the world, we tend to find a tourist who gets all of the leaflets. Suppose (P1) is a relevant portion of the world. In this portion of the world, we can't find a tourist who gets all of the leaflets. Hence, (10) cannot serve as a general description of situations such as (P1).

Suppose, however, that (P1) is not a relevant portion of the world. Suppose that the relevant portions of the world are those depicted by the five separate pictures in (P2). In other words, suppose that whenever we want to see if (10) is true, we divide big portions of the world, such as those depicted in (P1), into their little components in (P2). What will the status of (10) be? In each of the pictures in (P2), there is a tourist who gets the one and

only leaflet in the picture. Hence, in each one of these pictures, there is a tourist who gets all of the leaflets. (10) can, thus, be true as a general description of situations such as those in (P1).

(P2)   true   true   true   true   true
A   B   C   D   E
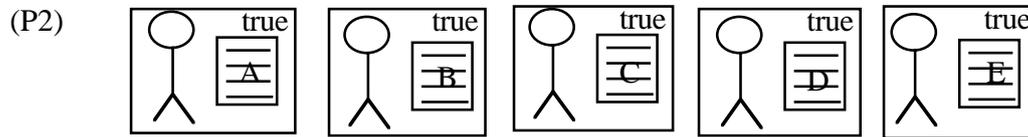
So, we have a way of thinking about the semantics of generic tense from which it follows that this tense should bring about scope illusions. We get the illusion that a universal quantifier has wide scope relative to an existential quantifier because the generic operator allows the existential to pick out a different individual in each relevant portion of the world. In the case of (10), the tourists don't vary with the leaflets. They vary with the pictures (in (P2)), but in each picture there is no variance. What remains to be shown is that our way of thinking about the semantics of generic tense is, in fact, correct. In other words, we have to show that generic tense allows us to break up the world into small pictures, and that the relevant pictures for sentences such as (10) could be those in (P2).

2.2. Why Many Pictures? Quantificational Semantics for Generics

The claim that in assessing the truth of a generic sentence we break the world into small pictures is in no way novel. In fact, it is the standard claim in a long tradition that analyzes generic tense as an operator that quantifies over situations (see Carlson & Pelletier (1995) and references therein). Situations are sub-components of the world; little spatio-temporal parts, just as those depicted in our pictures in (P2). A generic sentence, such as that in (11), quantifies over such situations. In the case of (11), the quantification is universal. The assertion (as we see by the paraphrase in (11b)) is that in every one of the situations, John smokes a cigar.

(11)   a.   John always smokes a cigar.
        b.   Every (relevant) situation s is a situation in which John smokes a cigar.

What is the motivation for assuming this semantics? In other words, what are the reasons for believing that the evaluation of generic sentences involves breaking the world into little pictures? Unfortunately, we don't have room to go over all the reasons (see Carlson & Pelletier, 1995). Nevertheless, we will try to present one. Consider a sentence such as (12a). This sentence exemplifies a well-known property of generic tense; its ability to give indefinites universal force. This property follows naturally under situation semantics.

(12)   a.   A cat is always black.
        b.   Every (relevant) situation s is a situation in which there is a black cat.

Situation semantics gives (12a) an interpretation such as that of the paraphrase in (12b). Suppose that the relevant situations include all pictures which have a cat in them. If that is the case, (12b) will imply that all cats are black. Of course, at this point there is a piece missing in the explanation. We still need a procedure which will determine what the relevant situations are. This procedure is described in the next subsection.

2.3. How to Determine the Division into Situations? Domain Restriction

The 'relevant' situations in paraphrases such as (11) and (12) are the situations that generic tense quantifies over. In the terminology of tripartitioning approaches to

quantification, they are the situations that satisfy the restrictor of the generic quantifier. In this terminology, we can rephrase our problem as that of finding a procedure for determining this restrictor. As it turns out, this problem can have two solutions. One solution is trivial: the restrictor of the generic quantifier can be stated explicitly in the sentence. The second solution is more sophisticated: the restrictor can be implicit, in which case it is determined, among other things, by the focus structure of the sentence.

2.3.1.   Explicit Restriction

Adverbial expressions can be analyzed as explicit restrictors of generic quantifiers (cf. Johnston (1994) and references cited there). To see this, consider the sentence in (13a). This sentence asserts that on all occasions where John shaves he is in the shower. In other words, the set of relevant situations is the set of situations which satisfy the restrictor provided by the adverbial, i.e., the situations in which John shaves. This is stated somewhat more formally in (13b).[5]

(13)   a. John is always in the shower when he shaves.
        b. Every situation s, such that   [s is a situation of John shaving]$_{\text{RESTRICTOR}}$
            is a situation in which   [John is in the shower]$_{\text{NUCLEUS}}$

2.3.2.   Implicit Restriction: The Relevance of Focus

The restrictor of a generic quantifier (or parts of it), like that of other adverbial quantifiers[6], can be implicit. In such a case it is determined by context, presupposition and focus.[7] We will concentrate on focus. Consider the contrast between the two sentences in (14) from Krifka (1995). In (14a), focus is on the object of the preposition. In (14b), focus in on the subject of the sentence.[8]

(14)   a. Planes disappear in the BERMUDA TRIANGLE.
        b. PLANES disappear in the Bermuda Triangle.

The two sentences differ in their meanings. (14a) asserts that in every case in which planes disappear someplace, it turns out that this place is the Bermuda Triangle. (14b), asserts that in every case in which something disappears in the Bermuda Triangle, it turns out that this thing is a plane. The situation-semantic paraphrases of these assertions are given in (15).

(15)   a. Every situation s, such that   [a plane disappears **somewhere** in s]$_{\text{RESTRICTOR}}$
            is a situations in which   [a plane disappears in the B-T]$_{\text{NUCLEUS}}$
        b. Every situation s, such that   [**something** disappears in the B-T in s]$_{\text{RESTRICTOR}}$
            is a situation in which   [a plane disappears in the B-T]$_{\text{NUCLEUS}}$

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[5]The analysis of temporal adverbs such as the *when*-clause in (13a) is actually more complicated than would appear from our discussion. In many cases, such adverbs can go into either the restrictor or the nuclear scope. The mechanism which determines their placement might reduce to focus along the lines of Section 2.3.2, as suggested in Rooth (1985) (but see Johnston 1994). However, the precise analysis is not crucial for the issues discussed in this paper.

[6]We use the term 'adverbial quantifiers' to refer to quantificational elements outside the DP, what Barbara Partee calls A-quantification (as apposed to D-quantification). For a discussion of the difference between the two types of quantification, see von Fintel (1994).

[7]Many researchers have tried to link these three types of restrictions. For a thorough discussion, see von Fintel (1994).

[8]We use capital letters to indicate focal stress. For a discussion of the way in which focal stress determines semantic focus, see Selkirk (1995).

How do we account for these focus effects? This question has been a topic of much debate. For presentational purposes, we can adopt the system developed in Rooth (1985). In this system, every clause has a focus value, which includes all alternative assertions to the one actually made by the clause:

(16)   For every clause C, the focus value F(C) of C is the set of the semantic values of the alternatives to C, where alternatives to C are derived by replacing the focused constituents of C with their alternatives (Rooth 1985).

Focus values affect focus sensitive quantifiers by entering into the determination of the restrictor. The basic idea is that the elements that are quantified over are restricted to those which are viable alternatives to the proposition that is asserted. To see how that would affect generic quantification, consider the focus values of the sentences in (14) presented in (17).

(17)   a. F((14a)) = {P: ∃x (P = [[Planes disappear in x]])}
        b. F((14b)) = {P: ∃x (P = [[x disappear in the Bermuda triangle]])}

In order to get the correct interpretation of the sentences in (14), we suggest, in the spirit of Rooth (1985), among others, that the domain of generic quantification (the set of relevant situations) is restricted to situations which satisfy an element in the focus value:

(18)   [[Generally]] C is true iff (almost) every situation s, such that s satisfies a sentence in F(C), satisfies C.

2.4. Explaining Scope Illusions

Consider again the sentence in (10), and the pictures in (P1) and (P2) repeated below. In section 2.1 we've shown that if we assume that situations such as those depicted in (P2) are the only ones relevant for the evaluation of (10) (if (P1) is irrelevant), the illusion of wide scope for the universal quantifier would follow. Now we are in a position to show that this assumption follows from the independently needed semantics for generics.

(10)   In general, I give [a tourist]∃ [every leaflet]∀.

(P1)   The situation doesn't satisfy the restrictor of the generic quantifier.
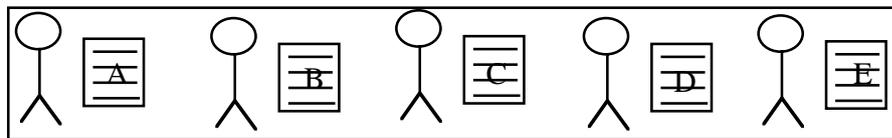
(P2)   The situations all satisfy the restrictor of the generic quantifier.
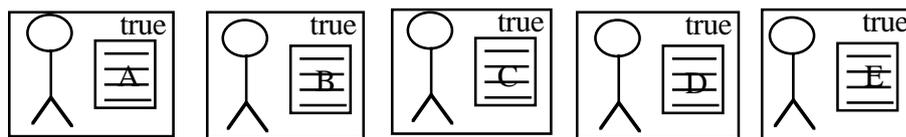
To derive the interpretation of (10), we have to know what the focus value of this sentence is. Suppose that focus is placed on the existential quantifier as in (19a). The

generic quantifier will be restricted to situations in which there is someone to whom I give every leaflet, as we can see in the paraphrase in (19b).[9]

(19)   a. In general, I give [A TOURIST]$_\exists$ [every leaflet]$_\forall$.
        b. Every situation s, such that   [I give **someone** every leaflet in s]$_{\text{RESTRICTOR}}$
            is a situation in which   [I give **a tourist** every leaflet]$_{\text{NUCLEUS}}$[10]

The situations in (P2) are situations in which there is someone who gets every leaflet, hence they satisfy the restrictor of (19). The situation in (P1) does not. This provides the missing part in our explanation of scope illusions. As the reader can verify, the explanation carries over to all the cases in Section 1. However, the explanation was given only for cases in which focus is placed on the existential quantifier (see note 4). In Section 3.3, we will see what happens when focus is shifted to other constituents.

3.   New Predictions

Three elements of our account of scope illusions make new predictions. First, on our account, *every* could have illusive scope in generic environments because it could be trivialized—its domain could be restricted to just one individual.[11] However, there are quantifiers that don't allow this trivialization. We expect that such quantifiers will not have illusive scope. Second, we claim that the origin of the quantificational force in cases of illusive scope is not *every*, but the generic tense. Since generic quantification tolerates exceptions, we predict that *every* in the scope of generic tense will seemingly tolerate exceptions. Third, our account makes use of the role focus plays for the semantic partition into restrictor and nuclear scope. Hence, we expect that the placement of focus might affect the availability of illusive scope of *every*. In the following three sections, we will try to show that each of the three predictions is indeed borne out.

3.1.   Different Quantifiers

The first prediction is that quantifiers which cannot be trivialized will not show illusive wide scope. Such quantifiers are those that require a plurality of individuals in their domain, e.g. *many*. In this sub-section we will show that the prediction is borne out; even in generic contexts, quantifiers such as *many* cannot show the semantic effects of a scope which is wider than their actual syntactic scope.

Compare the sentences in (20). In (20a = (2a)), as we have seen, the generic context allows the embedded quantifier *every tour to the Louvre* to show the semantic effects of wide scope, despite the intervening clause boundary. In (20b), we see that the embedded quantifier *many tours to the Louvre* cannot show the semantic effects of wide scope, despite the generic tense. (20b) cannot be true in a situation such as that depicted in (P3) where there is a different guide for each of the relevant tours. If we could get the semantic effects of wide scope for the embedded quantifier, the sentence would be true in a

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[9]Given the restriction on scope, the sentences in the RESTRICTOR and the NUCLEUS should be understood with the existential having wide scope over the universal.

[10]The domain of *every* is understood to be restricted by a situation variable which is bound by the generic operator. The situation variable is similar to the world-time variable proposed in work by Heim (1991) and Enç (1986).

[11]In picture (P2), the possible trivialization of *every* is illustrated. Every small situation in (P2) contains only one tourist and one leaflet, but the nuclear scope *I give a tourist every leaflet* is nevertheless true. It is true because *every leaflet* is restricted to the single leaflet contained in the situation. Only because this trivialization is allowed does illusive wide scope yield an interpretation equivalent to that of true wide scope.

situation such as (P3), as we can see by looking at sentences such as (21) where the lack of a clause boundary makes inverse scope possible.

(20)   a.   In general, [a guide]$_\exists$ ensures [$_{CP}$ that [every tour to the Louvre]$_\forall$ is fun.]
        b.   In general, [a guide]$_\exists$ ensures [$_{CP}$ that [many tours to the Louvre]$_M$ are fun.]

(P3)

tour a   tour b   tour c

tour d   tour e   tour f
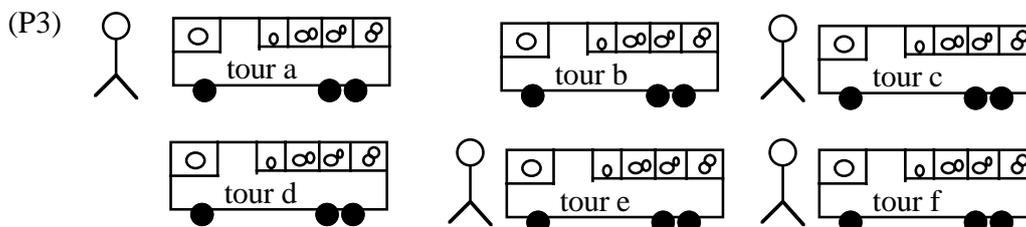
(21)   [A guide]$_\exists$ accompanies [many tours]$_M$

To see in greater detail that this is in fact our prediction, consider the interpretation that our semantics would give for the sentence in (20b). Suppose (without loss of generality) that focus is placed on the existential quantifier. The interpretation of (20b) would be the same as that of the paraphrase in (22). (22) is not appropriate for (P3) because there is no way of breaking (P3) into smaller situations such that in each of the smaller situations a guide accompanies **many** tours. (20b) is interpreted by the same procedure that (20a) is, but given the semantic properties of *many*, the illusion of wide scope doesn't come about.

(22)   Every situation *s*, such that   [someone makes sure that many tours to the
                                              Louvre are enjoyable in *s*]$_{RESTRICTOR}$,
            is a situation in which   [a guide makes sure that many tours to the
                                              Louvre are enjoyable.]$_{NUCLEUS}$

The fact that quantifiers such as *many* do not show scope illusions provides strong support for our account. In particular, it rules out conceivable alternatives which would attempt to relax scope restrictions in generic contexts. As far as we can see, a difference between quantifiers such as *every* and *many* would be totally unexpected under such alternatives.

3.2.   Tolerance of Exceptions

The second prediction is that *every* should tolerate exceptions when it occurs in the scope of generic tense. It is known that generic operators are tolerant to exceptions. This can be seen in examples like (23). Suppose that Heidi has a house in this area. Nevertheless, (23a) does not imply (23b).

(23)   a.   In general, a master craftsman builds a house in this area.
        b. $\nRightarrow$ A master craftsman built Heidi's house.

In contrast, *every* doesn't tolerate exceptions. This can be seen in (24), where the (a) sentence implies the (b) sentence.

(24)   a.   A master craftsman built every house in this area.
   b. $\Rightarrow$ A master craftsman built Heidi's house.

Consider *every* in generic sentences. Our account was based on the idea that the domain of this quantifier can be restricted to entities in a situation (e.g. to the single leaflet

in one of small pictures in (P2)). Despite this restriction, we still get the effect of quantification over all the entities in all the situations. However, this effect does not come from the universal quantifier. Rather, it comes from the fact that the generic quantifier scans all of the relevant situations. However, this scanning is tolerant to exceptions. We, thus, predict that *every* in generic sentences, in contrast to *every* in episodic sentences, would appear to tolerate exceptions. The predicted effect has already been observed to hold in Carlson (1989). The relevant examples are given in (25), where like in (23) the (a) sentence doesn't imply the (b) sentence.

(25)   a.   In general, a master craftsman builds every house in this area.
       b. $\not\Rightarrow$ A master craftsman built Heidi's house.

3.3. Relevance of Focus

The third prediction is that focus placement could affect the availability of illusive wide scope. In (26), we use question-answer pairs to control for focus placement. Putting focus aside, the answers in (26) are each the same ditransitive sentence. In the answers, true wide scope of *every problem* over *some student* is impossible, as shown in section 1.2. Hence, the answers in (26) can be true in a situation where the problems vary with the students only if illusive scope is possible as in (P4). Given this, we see that illusive scope is available in (26a) where the indefinite is focused and in (26c) where the subject is focused, but not in (26b) where *every* is focused.

(P4)
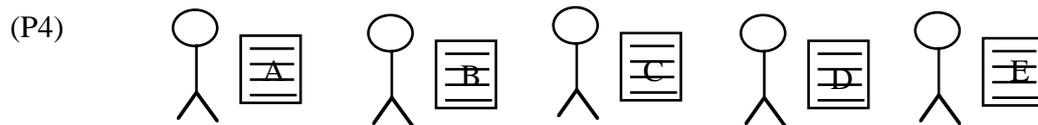
(26)   a. Q: Tell me, who are the poor people with all these assignments?
           A: Well, in general, Kai assigns some STUDENT every problem.
       b. Q: Tell me, what are the students holding in their hands?
           A_1: # Well, in general, Kai assigns some student EVERY problem.
           A_2: # Well, in general, Kai assigns some student EVERY PROBLEM.
       c. Q: Tell me, who assigned all these problems?
           A: Well, in general, KAI assigns some student every problem.

To show that this pattern of judgments is predicted by our account, let us take a closer look at the restrictors of the generic quantifiers which result from the focus placements in (26a) and (26b). The paraphrase for (26a) is given in (27). The restriction is to situations in which Kai assigns someone every problem. This will only admit the situations containing just one student and one problem shown in (P5). In these situations, it is also true that Kai assigns a student every problem. Hence, (26a) can be true.

(27)   Every situation *s*, s.t.   [Kai assigns **someone** every problem in *s*]$_{\text{RESTRICTOR}}$
       is a situation where   [Kai assigns **a student** every problem.]$_{\text{NUCLEUS}}$

(P5)
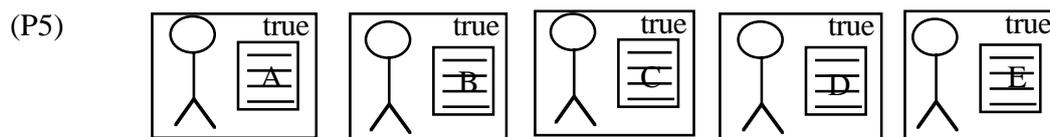
If *every* is focused, as in the first answer in (26b), the paraphrase is the one given in (28). The restriction is to situations where Kai assigns a student some proportion of the problems in that situation. This restrictor admits all situations which contain a student and

any number of problems, among others the situations shown in (P6). But, in most of the situations that satisfy the restrictor in (28), the nuclear scope is false---there is no single student who is assigned all the problems. Hence the sentence (26b) is false. For the same reasons, illusive scope will disappear where *every problem* focused.

(28)   Every situation s, s. t.   [Kai assigns a student **some proportion** of the
                                          problems in s]$_{\text{RESTRICTOR}}$,
         is a situation where   [Kai assigns a student **every** problem.]$_{\text{NUCLEUS}}$

(P6)
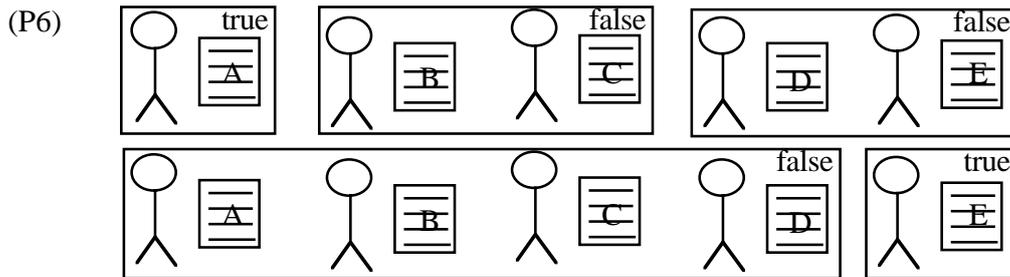
        Its sensitivity to focus differentiates illusive scope from true wide scope. The latter is possible for focused *every*. This is shown by the contrast in (29). In (29a), true wide scope is possible for *every problem*: the sentence can be true in a situation where each student is holding a different problem. In (26b), however, the ditransitive doesn't allow true wide scope. Since illusive scope for the focused *every problem* is not available for the reasons just discussed, (26b) must be false in a situation where each student is assigned a different problem.

(29)   a.   I don't know what exactly each student is holding but I'm sure that SOME
                  student is holding EVERY PROBLEM THAT WAS ASSIGNED.
         b. # I don't know what exactly each student is holding, but I'm sure that in
                  general, I assign SOME student EVERY PROBLEM IN THE BOOK.

        In Sections 3.1 to 3.3, we showed that our account of illusive scope makes three new empirical predictions, which are all borne out by the data. In the following section, we will show that our account, specifically the analysis presented in 3.3, also has wider theoretical relevance for the formulation of situation semantics.

4 .   Implication for Situation Semantics

        Our account of the unavailability of illusive scope in (26b) has ramifications for the formulation of situation semantics. We will show that it requires us to reject the use of minimal situations. In the standard formulation of situation semantics, e.g. in Berman (1987) and Kratzer (1989), adverbials and generics are assumed to quantify only over minimal situations. The evidence for minimal situations comes from examples like (30) which is true under the circumstances shown in (P7). But, this is predicted only if the quantification of the adverbial *exactly three times* is restricted to just the small situations, s_1, s_2 and s_3, containing just one tourist and one leaflet. If the restriction allowed bigger situations as well, e.g. the situation s_4, which contains all tourists and all leaflets, there would be more than three situations in which a tourist received a leaflet, and (30) would incorrectly be predicted to be false for (P7). Introducing a minimality condition on the situations quantified over is one way to achieve the correct range of quantification for (30).

(30)   Exactly three times, a tourist received a leaflet.

(P7)
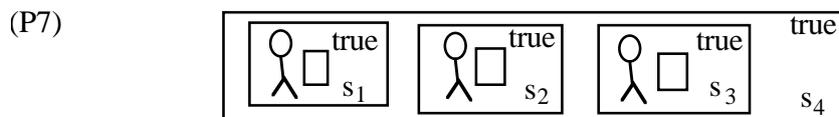
However, the discussion of example (26b) with its semantic paraphrase in (28) showed that the minimality condition yields incorrect predictions. In (28), the nuclear scope is true for all the minimal situations satisfying the restrictor, but the sentence is nevertheless false. Hence, quantification in (28) must range over situations other than the minimal situations satisfying the restrictor. To resolve the apparent conflict between our account of (26b) and the standard account of (30), we propose that adverbial quantification ranges over **pertinent** situations defined as follows.

Pertinent Situations: A situation s is pertinent for a clause C iff every individual contained in s is 'accessed' in the evaluation of C.[12]

The difference between a universal and an existential quantifier with respect to pertinence is that a universal makes any number of individuals that satisfy its restrictor pertinent, but an existential quantifier makes only one individual pertinent. Assuming this, the difference between (30) and (26b) follows from the fact that a universal occurs in the scope of the quantifier over situations in (26b), whereas an existential does in (30). Hence, in (26b), the universal quantifier makes any number of individuals satisfying its restriction pertinent; hence the 'big' situations satisfy the restriction of the quantifier over situations. But in (30), we only look at the 'small' situations because the indefinites each make only one individual pertinent.

5.   Extension: Binding Illusions

In this section, we will briefly present an extension of our account of scope illusions to one example of illusive binding by a universal quantifier. Consider the binding illusion possible in (31a). In (31a), *his advisor* and the pronoun *him* exhibit the semantic effect of binding, namely the reading where every student has a (possibly different) advisor, and every student sends his advisor a Christmas card. However, the semantic effect of binding in (31a) cannot be due to actual syntactic binding, because the antecedent *his advisor* doesn't c-command the pronoun *him*. Instead, the illusion of binding arises from the binding relations in (31b), where the pronouns is understood as a definite description (an E-type pronoun).

(31)   a.   Every student$_2$ who likes [his$_2$ advisor]$_1$ sends him$_1$ a Christmas card.
         b.   Every student$_2$ who likes [his$_2$ advisor]$_1$ sends his$_2$ advisor a Christmas card.

In general when an NP n doesn't c-command a pronoun p, binding is impossible. Nevertheless, a binding illusion is possible if there is an operator, O, which c-commands both n and p, and if there is a definite description that can pick the same value that n picks for each element that O quantifies over. We propose that generic tense can serve as the necessary operator. In doing so, it can bring about binding illusions which are exactly parallel to the scope illusions we discuss in Section 1. Consider the contrasts in (32-33), pointed out to us by David Pesetsky.[13] In the (a) examples, we see that syntactic binding of a pronoun in the subject is not possible for a universal quantifier inside the verb phrase.

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[12]For concreteness, we could think of an individual i as being 'accessed' in the evaluation of C if there is is a property of i, such that if i didn't have this property the truth value of C would be different.

[13]Contrasts of this sort were noted for implicit variables in Partee (1989: fn. 10), who attributes the observation to Zi-Qiang Shi. Partee suggests an account of these binding illusions which is very similar to ours.

This grammatical restriction is called the prohibition against weak crossover (WCO). The (b)-examples show that in generic sentences the markedness effect of WCO doesn't seem to arise.

(32) a. $^{??}$Last year, her$_1$ thesis year was the hardest for every student$_1$.
      b. Her$_1$ thesis year is the hardest for every student$_1$.

(33) a. $^{??}$At the beginning of the dance last night, his$_1$ wife stood behind every man$_1$.
      b. Some people think that his$_1$ wife stands behind every great man$_1$.

As in the case of scope illusions, two different explanations for the above contrasts are possible. One possibility is that the prohibition against WCO doesn't apply in generic sentences. The second possibility is that, in generic sentences, the effect of binding is an illusion. The second possibility is preferable, because it fits naturally into the semantics of generics and because it doesn't require a complication in the formulation of the prohibition against WCO.

We propose that, in the (b) examples, the pronoun is an E-type pronoun. That is to say, the pronoun is understood as a definite description dependent on the situation that the generic tense quantifies over. The binding relations we would arrive at for (32b) are indicated in (34).

(34) For every relevant situation s, (the student in s)$_{her}$'s thesis year is the hardest for every student in s.

As the reader can verify, the illusion of binding is possible only if the relevant situations each contain a single student (similar to the pictures in (P2)). Given that focus enters into the determination of the relevant situations, we predict focus to interact with binding illusions along the lines of the interaction with scope illusions we have seen in Section 3.3. This is indeed the case, as shown by the examples in (35). In (35a) with focus on the subject, generic tense obviates the effect of the weak crossover configuration; (35b), which has focus on the universal quantifier, is odd.

(35) a. In general, HIS THESIS YEAR is the hardest for every student.
      b. In general, his thesis year is the hardest for EVERY STUDENT.

This contrast might be due to the presuppositions of the definite description that the E-type pronoun *his* corresponds to. We can see this by looking at the interpretations assigned to (35a) and (35b), which are paraphrased in (36a) and (36b) respectively. In (36a), the E-type pronoun *his* doesn't occur in the restrictor because it's part of the focus. Hence the restrictor of (36a) can always be evaluated. But in (36b), the E-type pronoun occurs in the restrictor because it's not part of the focus. Hence, the restrictor of (36b) presupposes that there is a unique student in every situation s that is salient in discourse, which will never be the case.[14]

(36) a. Every situation s, s.t. [something is the hardest for every student
                                      in s,]$_{RESTRICTOR}$
           is a situation where   [the thesis year of (the student in s)$_{his}$ is
                                      the hardest for every student.]$_{NUCLEUS}$
      b. Every situation s, s.t. [the thesis year of (the grad student in s)$_{his}$ is
                                      the hardest for someone in s,]$_{RESTRICTOR}$
           is a situation where   [the thesis year of (the grad student in s)$_{his}$ is

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[14]Actually, the presupposition of the restrictor of (36b) would be fulfilled if there is just one salient student in the discourse. But then, the use of the expression *every student* in (35b) is pragmatically marked.

the hardest for every student.]_{NUCLEUS}

the hardest for every student.]$_{\text{NUCLEUS}}$

5.   Conclusion

To conclude, let us briefly repeat the three main points that we have made in this paper:

I: Generic tense seems to nullify a number of well-established constraints on scope (and binding) mechanisms.

II: The nullification is only apparent. The facts are explained by the semantics of generics and don't have any relevance for our understanding of scope and binding mechanisms.

III: The analysis presented supports a situation-semantic approach to generics and, in fact, bears on its formulation.

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