

Unselective Binding and Any-Phrases*

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0. Introduction

The apparently quantificational expression *any* has long been one of the central topics in linguistics. In particular, its semantic aspects have often been described and analyzed by such linguists as Quine, Vendler and Horn, to mention a few. In recent developments of the Government and Binding theory, the peculiar behavior of *any* has sometimes been pointed out, in comparison with other quantificational expressions such as *everyone*, *someone*, and *wh*-phrases. One established fact is that *any*-phrases can only occur in some restricted set of contexts, among which are negative sentences, conditional clauses, and interrogative sentences, while they cannot appear in declarative sentences:

- (1) a. John didn't invite *anyone* to the party.
- b. If John invites *anyone* to the party, he will come.
- c. Did John invite *anyone* to the party?
- d. *John invited *anyone* to the party.

In this paper, I will try to capture the relation between the *any*-phrases and the 'licensors' in terms of the mechanism first proposed in Heim (1982), namely, Unselective Binding, characterizing *any* as a kind of indefinite NP. The analysis along these lines will give an optimal account of the anaphora facts, as we will see in the later sections.'

1. *Any* and Other Quantifiers

1.1. Lack of Weak Crossover Effects

It is now a well-established fact that for a quantified NP to be coindexed with a pronoun at LF, the trace left by Quantifier Raising or *wh*-movement must c-command the pronoun. Thus in the following configuration, the pronoun cannot have the same index as the *wh*-

phrase or the QP:²

- (2) * [...WH_i/QP_i...t_i...pronoun_i...]
 if t_i does not c-command *pronoun*_i

In other words, a quantified NP cannot be the antecedent of a pronoun that it does not c-command at S-Structure. There is no such constraint for proper names. A proper name can be quite freely coindexed with a pronoun unless the latter c-commands the former.³ Consider, for example, the contrast observed between (3a) and (3b):

- (3) a. *That *he*_i had been drafted didn't bother *every patriot*_i.
 b. That *he*_i had been drafted didn't bother *John*_i.
 (cf. Hornstein (1984))

While the NP *John* in (3b) can have the same index as the pronoun *he* even though the former does not c-command the latter, it is impossible to coindex *every patriot* and *he* in (3a) since the QP does not c-command the pronoun.

What is interesting to us is that an NP containing *any* does not need to c-command a pronoun in order to be coindexed with it, as we see in (4). In fact, the *any*-phrase seems to behave on a par with the proper name *John*.

- (4) That *he*_i had been drafted didn't bother *any patriot*_i.

The same is true with other constructions like those in (5) and (6), where again the NPs *any dog* in (5c) and *any guest* in (6b) can be coindexed with a pronoun without c-commanding it:

- (5) a. *If John found *every dog*_i, he fed *it*_i.
 b. If John found *Fido*_i, he fed *it*_i.
 c. If John found *any dog*_i, he fed *it*_i.

(Aoun and Hornstein (1986))

- (6) a. *Lucy never kisses *each guest*_i when *he*_i talks about Hegel.
 b. Lucy never kisses *any guest*_i when *he*_i talks about Hegel.
 (Reinhart (1987))

1.2. Any in LF

Pointing out that *any*-phrases lack the relevant property that QPs have with respect to anaphora with pronouns, Hornstein (1984) and Aoun and Hornstein (1986) have characterized them as namelike expressions which do not undergo LF-movement, on a par with such referring expressions as *John* and *that man*, with respect to the condition on coindexation with a pronoun, namely the Binding Condition C:

- (7) Names must be A-free.

Thus an *any*-phrase can be the antecedent of a pronoun unless the latter c-commands the former, just as the proper name *John* can:

- (8) a. That *he*_i might be laughed at didn't bother *John*_i.
 (= (3b))
 b. That *he*_i might be laughed at didn't bother *any clown*_i.
 (= (4))
- (9) a. **He*_i does not bother *John*_i.
 b. **He*_i does not bother *any clown*_i. (Hornstein (1984))

While the relevant NPs can each be the antecedent of the pronoun in (8a,b), coindexing is not permitted in (9a,b) since the pronoun in the subject position c-commands and thus illegally A-binds *John* and *any clown* in the object position, leading to a violation of (7).⁴

2. Unselective Binding of Any-Phrases

2.1. Any-Phrases as Indefinites

In Section 1, we have reviewed the characterization of *any*-phrases that Aoun and Hornstein have proposed: that is, *any*-phrases are namelike expressions and do not undergo LF-movement. While we basically share this view with them, the contrast in the following examples tells us of the necessity to elaborate further on the characteristics of *any*-phrases. Consider:

- (10) A. Is *anyone*_i at the door?
 B. *No, *he*_i is not there.

- (11) A. Is *Tom*_i at the door?
 B. No, *he*_i is not there.

While the proper name *Tom* is the antecedent of the pronoun *he* in (11), the 'namelike' *anyone* cannot, as in (10).

We characterize *any*-phrases as constituting one kind of indefinite NP.⁵ To illustrate the particular view we take on indefinites, let us consider the following example:

- (12) John *may* buy *a car*.

Besides the specific reading of the indefinite *a car* wherein it establishes its referent in the actual world, it also has the nonspecific reading: *a car* is taken as referring to an object in some possible world. We regard the indefinites with the latter interpretation as a kind of 'free-variable' in the sense of Heim (1982). On this view, the referent of a nonspecific indefinite NP is not predetermined but is determined by some external source: namely, by the value picked up by some operator ranging over the set of possible worlds. In the case of (12), *a car* establishes its referent in the possible world which the modal auxiliary *may* picks up as its own value.⁶

Turning to *any*-phrases, we take them as a kind of indefinite that can only have a nonspecific interpretation: that is, *any*-phrases

can establish their referents in possible worlds but not in the actual world (cf. Lasnik (1972)). Thus they always need some possible world operator that determines their referents.⁷

With what we have illustrated above, we will treat *any*-phrases approximately on a par with indefinite *a*-phrases with respect to their behavior: specifically, *any* is subject to what Heim calls 'Unselective Binding'. The analysis we will develop in terms of this mechanism will provide some consequences, as we will see in the following sections. In particular, we will show in Section 3 and 4 that several anaphora facts can be optimally accounted for with our analysis.

2.2. Unselective Binding

Consider the following example:

(13) Everyone who owns *a donkey*₁ likes *it*₁.

Here the indefinite *a donkey* has a nonspecific interpretation and is referentially dependent upon the value picked up by the QP *everyone*: different donkeys must correspond to different persons picked out by the QP. At the same time, the pronoun *it* is also dependent upon the QP: it receives the same value that is assigned to *a donkey*. Heim (1982) and Haik (1984) independently have characterized this referential dependency as a sort of binding relation, namely what they call Unselective Binding and Indirect Binding, respectively.⁸ (In this paper, let us adopt the term Unselective Binding (henceforth, U-Binding) for the purpose of discussion.) Let us state as follows what U-Binding is:

- (14) An indefinite NP;
- a. has a nonspecific interpretation, and
 - b. is dependent for its referential value on a logical operator,
iff the logical operator c-commands the NP at S-Structure.

We also assume the following as a condition on the anaphora of nonspecific indefinite NPs and pronouns. (cf. Heim (1982), Haik (1984), Reinhart (1987))

- (15) A nonspecific indefinite NP and a pronoun may be coindexed iff (i) both are c-commanded by the U-binder at S-Structure, or (ii) the XP immediately dominating the U-binder of the indefinite c-commands the pronoun at S-Structure.⁹

Consider (13) again:

- (13) Everyone who owns *a donkey*₁ likes *it*₁.

The indefinite NP *a donkey* is c-commanded by the QP *everyone* and the pronoun *it* is c-commanded by the immediate XP dominating *everyone*, namely, the whole NP *everyone who owns a donkey*.

If (the immediate XP dominating) the U-binder of an indefinite NP fails to c-command a pronoun, coindexing is impossible. This is illustrated by the following examples:

- (16) a. [Every knight who courted *a lady*₁] visited *her*₁ mother.
 b. **Her*₁ mother visited [every knight who courted *a lady*₁].
 (Reinhart (1987))

- (17) a. *[Everyone who owns *a donkey*₁] came, and Mary bought *it*₁.
 b. *[Shouting at [everyone who owns *a donkey*₁]] frightened *it*₁.
 (Haik (1984))

In all of these, although the indefinite (*a lady* in (16b) and *a donkey* in (17a,b)) is U-bound by a QP (*every knight* in (16b) and *everyone* in (17a,b)), the whole NP does not c-command the pronoun. Thus coindexing is impossible between the indefinite and the pronoun.

2.3. Unselective Binding of *Any*

Let us go back to the main stream to consider how to treat *any*. In the previous section, we have seen that indefinite NPs have a nonspecific interpretation when they are dependent on (in our terms, U-bound by) some operator licensing the nonspecific interpretation. There we assumed, rather tacitly, that indefinite NPs have a specific interpretation when there is no such operator. As we illustrated earlier, *any* is a kind of indefinite having only a nonspecific interpretation: it must be referentially dependent on, or in other words must be licensed by, some appropriate operator. Let us then state the relevant condition for licensing *any* as follows:

- (18) *Any* must be U-bound by such operators as *not*, *if*, and *Q*.^{10, 11}

The proposal can be justified by the following observations and a theoretical consideration. The first has to do with the notion of c-command and that of scope. It has been observed that the scope of the negation cliticized onto INFL may contain the subject, as we see in the following:

- (19) *Everyone didn't* invite John.
 i) "Not everyone invited John." (NOT>EVERY)
 ii) "Everyone is such that (s)he didn't invite John. (=No one invited John.)" (EVERY>NOT)

However, 'taking scope over' is not a sufficient condition for licensing the occurrence of *any*-phrases. Rather, a more strict structural relation, namely c-command, must hold between the potential licenser and *any*. This is confirmed by the fact that although the negation at INFL takes scope over the subject position, *any* cannot take place in the subject position, unless some other operator c-commands it:¹²

- (20) a. **Anyone didn't* invite John.

- b. *If anyone* doesn't invite John,.....

We can explain this fact by appealing to U-binding, a relation encoded in terms of a structural relation c-command. In (20a), the negative operator cannot c-command *anyone* in the subject position so that nothing licenses the occurrence of it.

Secondly, just as a quantified adverb *always* can U-bind more than one indefinite NP as in (21), as the term 'unselective' suggests, more than one *any*-phrase can take place in the c-command domain of a licensing operator:

- (21) a. *Always*, if a man owns a donkey, he likes it .
 b. $[Ax:x=a \text{ man} \ \& \ Ay:y=a \text{ donkey}]$ (if x owns y, x likes y)

- (22) John *didn't* invite *anyone* to *any* party.

The third point has to do with the so-called *any*-thesis. In most of the examples I have presented, *any* was interpreted like an existential quantifier, Ex.¹³ Consider for example:

- (23) a. John *didn't* invite *anyone*.
 b. NOT $[Ex:x=a \text{ person}]$ (John invited x)

In a certain set of contexts, the interpretation of *any* approximates to that of a universal quantifier:

- (24) a. *Any* doctor will tell you that stopsneeze helps.
 b. *Every* doctor will tell you that stopsneeze helps.
 c. $[Ax:x=a \text{ doctor}]$ (x will tell you that stopsneeze helps)

Any doctor in (24a) has approximately the same interpretation as *every* doctor in (24b). The existence of this 'universal' *any* has led some linguists to claim that there are two distinct *any*'s. However, by taking *any* as a kind of indefinite whose referential value is not predetermined, we can avoid this undesirable state of affairs of

positing two *any*'s. Specifically, we can derive the universal reading of *any doctor* in (24a) by positing an abstract universal quantifier ranging over the set of possible worlds, as the U-binder of the *any*-phrase. See Homma (to appear) for the analysis of the universal *any* and its consequences.

3. Chain Binding

We have seen and given an account of the fact that *any* cannot occur where an appropriate operator does not c-command, as in (20a). However, there are cases where *any* may take place in a position that the U-binder apparently fails to c-command:

(25) That they had invited *any of the boys* I did *not* know.
(Taglicht (1984))

(26) A doctor who knows *anything* about acupuncture wasn't available.
(Linebarger (1980))

In (25), the negative *not* does not c-command the topicalized clause that contains *any*. Likewise, the subject NP *a doctor who knows anything about acupuncture* in (26) is outside the c-command domain of *n't*.

We can solve this apparent problem by appealing to 'chain-binding' as defined informally below:

(27) X chain-binds Y iff
[....X₁....Y₁....] and
i) X c-commands Y, or
ii) X c-commands the trace of Y, or
iii) X c-commands the trace of Z that contains Y.
(cf. Barss (1986))

Barss (1986) has proposed the mechanism to account for the cases where a QP can bind a pronoun which it does not c-command:

- (28) a. [Which friend of his₁ father]₂ did *everyone*₁ attack t₂?
 b. *[Which friend of his₁ father]₂ t₂ attacked *everyone*₁?

In (28a), although the QP *everyone* does not c-command the pronoun *his*, it does c-command the trace of the NP (*which friend of his father*) containing the pronoun. Thus we can obtain the reading where the pronoun is interpreted as a bound variable of the QP. In (28b), on the other hand, the QP neither c-commands the pronoun itself nor the trace t₂ of the larger NP containing it (*which friend of his father*), so that the bound variable interpretation of the pronoun is not obtained.

Let us then observe that chain-binding is also at work in the case of U-binding. In (25), repeated as (29), the topicalized finite clause has left a trace in the object position of *know*:

- (29) [that they had invited *any of the boys*]₁ I did not know t₁
 (Taglicht (1984))

Here, even though *not* does not c-command *any of the boys* itself, it does c-command the trace of the topicalized clause which contains the *any*-phrase. If this relation does not hold, the *any*-phrase cannot be licensed, as we see in:

- (30) *[that they had invited *any of the boys*]₁ [[the man who did not come] knew t₁]

Turning to (26), repeated as (31a), let us pair it with another example (31b) where the subject containing *any* is construed as the agent in the sentence:

- (31) a. A doctor who knows *anything* about acupuncture wasn't available.
 b. *A doctor who knows *anything* about acupuncture didn't agree with the diagnosis. (Linebarger (1980))

It has been proposed by some linguists that such a theme subject as the one in (31a) is not generated in the SPEC of IP but inside VP at D-Structure and then raised to the SPEC of IP at S-Structure, as illustrated as follows (cf. Stowell (1981), Belletti and Rizzi (1988)):

(32) [_{IP} NP_i [_{VP} t_i available]]

The following examples show that *be available* belongs to the set of predicates which generates the subject inside VP. Consider:

- (33) a. Tickets to *each other*_i's concerts were not available to *Phil Collins and Paul McCartney*_i.^{14, 15}
 b. *Buyers of *each other*_i's records did not attack *Phil Collins and Paul McCartney*_i.

In (33a), the theme subject *tickets to each other's concerts* has left a trace in its D-Structure position, so that the antecedent plural NP *Phil Collins and Paul McCartney* can manage to c-command the trace and hence chain-binds the reciprocal *each other*. In the case of (33b), no such trace is available within VP, since the agent subject *buyers of each other's records* is generated in the SPEC of IP.

Likewise, the negative in (31a) c-commands the NP trace of the derived subject *a doctor who knows anything about acupuncture* so that the chain-binding holds between the U-binder (the negative) and the *any*-phrase:¹⁶

(34) [[a doctor who knows *anything* about acupuncture]_i [wasn't
 [t_i available]]]

In contrast, since the subject NP of (31b) is not the one derived via subject raising, the sentence does not have an NP-trace that the negative would c-command:

(35) [[a doctor who knows *anything* about acupuncture]_i [did not

[agree with the diagnosis]]]

4. Anaphora Facts

In this section, I will show that several anaphora facts can be optimally accounted for in terms of U-binding. In the cases of donkey anaphora, an indefinite NP U-bound by an operator may be the antecedent of a pronoun if the pronoun is also c-commanded by (the immediate XP of) the operator. Thus in (36), the pronoun cannot be taken as anaphoric to the indefinite since the XP immediately dominating the U-binder (*everyone who owns a donkey*) does not c-command the pronoun:

- (36) *[Shouting at [everyone who owns a donkey₁]] frightened it₁.

The relevant condition on anaphora of an *any*-phrase and a pronoun is stated as follows:

- (37) An *any*-phrase can be the antecedent of a pronoun iff (i) both are U-bound by an appropriate operator, or (ii) the XP immediately dominating the U-binder of the *any*-phrase c-commands the pronoun.¹⁷

First consider the following examples:

- (38) a. *Mary is not teasing *everyone*₁ because she hates *him*₁.
 b. Mary is not teasing *anyone*₁ because she hates *him*₁.
 c. Mary is not teasing *John*₁ because she hates *him*₁.

In (38a), the QP *everyone* cannot be the antecedent of the pronoun *him* because the QP does not c-command the pronoun. In contrast, *anyone* in (38b) may be the antecedent of the pronoun, so that the sentence is interpreted as "For no x:x=a person, Mary is teasing x because she hates x." So far, *anyone* apparently behaves on a par with the proper name *John* in (38c). However, only in one of the potential

interpretations of (38b) can the anaphora be permitted: that is, the *because*-clause must be in the scope of negation. Thus Mary may be teasing someone, but it is not because she hates the person she teases. The coindexation will be impossible if the *because*-clause is interpreted as outside the scope of negation. In fact, if we put a pause right before the *because*-clause to force the *BECAUSE>NOT* reading, the relevant anaphoric relation is totally impossible as in (39a), as opposed to (39b) involving a proper name *John*:

- (39) a. *Mary is not teasing *anyone*₁, because she hates *him*₁.
 b. Mary is not teasing *John*₁, because she hates *him*₁.

We can account for this fact in terms of U-binding. In light of the observation that the scope relation between the negative and an adjunct is identical to their c-commanding relation, as seen in;

- (40) a. John *doesn't always* wash his face. (NOT>ALWAYS)
 b. John *always doesn't* wash his face. (ALWAYS>NOT)

it is reasonable to assume that in the case of *NOT>BECAUSE* reading, the *because*-clause in (38b) is indeed c-commanded by the negative. If so, the negative c-commands and hence U-binds both *anyone* and *him*. Thus, by (37), anaphora is permitted between the two NPs under the *NOT>BECAUSE* reading. On the other hand, under the *BECAUSE>NOT* reading of (38b), and in (39a) where this reading is forced by the pause, the adjunct clause and hence the pronoun must lie outside the c-command domain of *not*. Consequently, the pronoun cannot be U-bound by the negative so that anaphora is impossible between *anyone* and *him*.¹⁸

Next consider:

- (41) a. If *any soldier*₁ is armed, *he*₁'ll shoot.
 b. If *John*₁ is armed, *he*₁'ll shoot.

Why is anaphora possible in (41a)? The indefinite NP *any soldier* is

U-bound and hence licensed by the conditional operator *if*, and the whole clause (*if any soldier is armed*), the XP immediately dominating *if*, in turn c-commands and U-bind the pronoun *he*. Thus we can coindex the two NPs since they are both U-bound by *if*.

However, consider:

- (42) a. *[Asking Mary [if she loved *any boy*_i]] made *him*_i angry.
 b. [Asking Mary [if she loved *Tom*_i]] made *him*_i angry.

Any boy in (42a) cannot be the antecedent of the pronoun *him*, as opposed to *Tom* in (42b). *Any boy* in (42a) is U-bound by *if*. But neither the conditional operator nor the XP immediately dominating it (*if she loved any boy*) c-commands the pronoun. Thus anaphora is impossible because the pronoun fails to be U-bound by the U-binder of the indefinite. This is on a par with such donkey anaphora cases as given below:

- (43) *[Shouting at [some people who own *a donkey*]_i]
 frightend *it*_i. (Haik (1984))

Here, the QP *some people* U-binds the indefinite *a donkey* but not the pronoun *it*, since the whole NP *some people who owns a donkey*, embedded inside the subject, fails to c-command the pronoun in the object position.

Next let us consider:

- (44) (The fact) that *he*_i had been drafted didn't bother
 a. *any patriot*_i.
 b. *that patriot*_i.
 c. **every patriot*_i.

As we have seen in Section 3, the theme subject of psych verbs (*annoy*, *bother*, *disappoint* etc.) is generated inside VP at D-Structure and then raised to the SPEC of IP at S-Structure (Belletti and Rizzi (1988)). Then again the subject *the fact that he was drafted* in (44)

has left an NP-trace inside the VP:

- (45) [_{IP} [(the fact) that *he*₁....]₂ [_{VP} *t*₂ bother any patriot₁]]]

The negative *c*-commands the NP-trace *t*₂ of the raised subject that contains the pronoun. Thus, making use of the chain thus formed, the negative *U*-binds *any patriot* and *he*. If the subject containing the pronoun is not the one derived via NP-movement, the relevant anaphora does not obtain. This is illustrated by:

- (46) A communist who hated *him*₁ didn't attack
 a. **any patriot*₁.
 b. *that patriot*₁.
 c. **every patriot*₁.

5. A Note on Intersentential Anaphora

Let us try to account for intersentential anaphora of *any*-phrases along the same lines. As noted by Haik, a pronoun cannot take a *U*-bound indefinite NP as the antecedent if it is contained in a separate sentence:

- (47) * [Some men who owned a donkey₂]₁ liked *it*₂, but Mary hated *it*₂.

However, anaphora is possible if the pronoun is *c*-commanded and hence *U*-bound by a different token of the appropriate operator *U*-binding the antecedent:

- (48) [Some men who owned a donkey₂]₁ liked *it*₂, but
 a. *they*₁ did not feed *it*₂ well.
 b. *?*it*₂ bit *them*₁. (Haik (1984))

In (48a), the pronoun *it* is *U*-bound by *they*, which counts as a

different token of the U-binder since it refers to the set of *men* established by the U-binder *some men* in the previous sentence. In (48b), on the other hand, it is impossible for *it* to be anaphoric to *a donkey* since the potential U-binder *them* does not c-command the pronoun.

The relevant condition is that a nonspecific indefinite and a pronoun are both U-bound by, and hence are referentially dependent upon, some operator; that is, they both refer to objects in possible worlds. Consider a case of *any*:

- (49) If you write *any paper*₁, bring *it*₁ to me. If *it*₁ is good, I will give you an A+.

Here, *any paper* and the second occurrence of *it* in the separate sentence are both U-bound by *if*. Hence anaphora is permitted. *Any paper* refers to a paper in a possible world created by *if*, and so does the pronoun. The relevant U-binder may be of different kinds. Consider:

- (50) Have you written *any paper*₁? If *it*₁ is good, I will give you an A+. (U-binders = *Q(uestion)*, *if*)

- (51) If you write *any paper*₁, bring *it*₁ to me. I will comment on *it*₁.¹⁵ (U-binders = *if*, *will*)

Anaphora is not permitted if the pronoun fails to be U-bound, as in (52), since in that case, the pronoun must refer to some object in the actual world and cannot refer to any object in possible worlds, while *anyone* establishes its referent in a possible world:

- (52) If *anyone*₁ is at the door, let *him*₁ in. **His*₁ name is John. (cf. Lasnik (1972))

While *him* in the consequent clause can be anaphoric to *anyone* since it is U-bound by the whole *if*-clause, *his* in the separate sentence

cannot, since no appropriate operator U binds it. Just the same is true of our earlier example, repeated as (53):

- (53) A. Is *anyone*₁ at the door?
 B. *No, *he*₁ is not.

The situation is quite different in the cases where an *any*-phrase is U-bound by the negative. Consider:

- (54) Professor Simon hasn't invited *any of his students*₁ to his house these days. *But if *he*₁ writes an excellent paper, he will certainly hold a party.

Here, the *any*-phrase and the pronoun are U-bound by the negative and the conditional operator, respectively. However, anaphora is not permitted. Why should this be so?

We reason as follows. Suppose S_1 (*entence*)₁ contains an antecedent and S_2 a pronoun. In order for the pronoun to be anaphoric to the antecedent, it needs to be able to refer to the set of referents established by the antecedent in some world. Consider for example:

- (55) Everyone who owns *a donkey*₁ came. Mary saw *them*₁.

The first sentence is understood to introduce a set of donkeys that the comers own. One donkey-referent is established per person so that consequently as many donkey-referents as the comer-referents are established in the discourse. The pronoun then refers to that set of donkeys.

Going back to (54), obviously we see that the set of students that Prof. Simon invited is empty, so that no possible referents are established in any world. Thus in whichever world *he* seeks its possible referent, it cannot find any appropriate referent. Matters are just the same when the pronoun is U-bound by other operators:¹⁹

(56) I haven't taken *any of my daughters*₁ out to dinner recently. *But instead, I will take *her*₁ to Disneyland.
(U-binders = n't, will)

(57) Mary is not teasing *any of the boys*₁. *She is not talking to *him*₁, either. (U-binders = not, not)

6. Conclusion

In this paper, we have treated *any*-phrases as a kind of indefinite expression and characterized the licensing of occurrence of *any* as a subcase of the sort of binding that we refer to as U-binding, which serves to determine the referential value of indefinite NPs. With this approach, we have presented an optimal account of both intrasentential and intersentential anaphora facts.

NOTES

*I would like to express my deepest gratitude to Minoru Nakau, Yukio Hirose, Yuji Takano, Masaharu Shimada, Kazue Takeda, and Hidehito Hoshi for their comments and suggestions. I am also grateful to John Plagens, who kindly acted as an informant. Needless to say, any remaining error is my own.

¹ In this paper, I will not discuss the so-called 'free-choice' *any* that generally can appear in such generic and modal contexts as follows:

- (i) a. *Any cat* has one tail.
b. *Anyone* will help you. (Davison (1980))

Due to the existence of this kind of *any*, whether there should be one or two *any*'s has been a controversial issue among linguists (Lasnik (1972), Linebarger (1980), Carlson (1980), etc.). For a unitary analysis of two *any*'s, see Davison (1980) and Homma (to appear).

² Note that this holds only for bound variable pronouns. E-type pronouns, as exemplified below, may occur outside the c-command domain of an antecedent QP:

- (i) *Few congressmen*_i admire Kennedy, and *they*_i are very junior.

See Evans (1980) for details.

³ This is what the Binding Condition C says: namely;

- (i) R-expressions (names, variables) must be A-free.

⁴ The lack of ECP effects also suggests that *any*-phrases do not move at LF. Consider:

- (i) a. He doesn't believe that she knows *any felons*.
 b. He doesn't believe that *any felons* know her.

What is interesting is that *any felons* in (ib), as well as the one in (ia), can have the matrix scope interpretation, while *wh*-phrases and French negative polarity QPs in the embedded subject position cannot:

- (ii) a. Who believes that John bought *what*?
 b. *Who believes that *what* was bought by John?
- (iii) a. Jean n'exige que Marie voit *aucun des enfants*.
 Jean Neg requires that Marie see any of the children
 "Jean doesn't require that Marie see any of the children."
 b. *Jean n'exige que *aucun des enfants* aille en
 Jean Neg requires that any of the children go in
 vacances.
 vacations
 "Jean doesn't require that any of the children go out in
 vacations."

⁵ This view on *any* has been rather implicitly taken in the literature. See Heim (1982), Haik (1984), and Reinhart (1987). In this paper, we explicitly put forward this view and see some empirical consequences.

⁶ There seem to be two ways to characterize the specific reading of indefinites. One is to regard them as 'inherently' referential in the sense of Fodor and Sag (1982). The other is to take them as referentially undetermined, just as we did in the cases of nonspecific reading. Specifically, the specific reading of the indefinite in the following example may be said to be the result of being referentially dependent on the tense that refers to some temporal point in the actual world:

(i) John bought *a car*.

We will not elaborate on this point any further.

⁷ This is not to say that *any* can occur in any 'possible world' or 'unrealized' context. For example, although the complement clause of *want* is taken as describing an unrealized event, or an event in some possible world, *any* is not permitted to occur in it.

(i) I want to catch $\left\{ \begin{array}{l} a \text{ fish} \\ *any \text{ fish} \end{array} \right\}$.

For the attempts to characterize the proper domains conditioning *any*, see Ladusaw (1979) and Linebarger (1980, 1987).

⁸ Besides these linguists, Reinhart (1987) refers the relevant relation as 'Operator Binding'. Although the terms vary from linguist to linguist, we take these to be intended to capture the same relation.

⁹ This is not to say that binding relations are encoded at S-Structure. Rather, we follow the general assumption that such a relation as binding is encoded at LF. Thus the conditions that we stated as (14) and (15) are in fact enforced at LF so that they are

precisely formulated as follows:

- (i) An indefinite NP;
 - a. has a nonspecific interpretation, and
 - b. is dependent for its referential value on a logical operator,
 - iff *the whole chain created by the (LF-)movement of the logical operator c-commands the NP at LF.*

- (ii) A nonspecific indefinite NP and a pronoun may be coindexed iff (i) both are c-commanded by *the whole chain of* the U-binder, or (ii) *the whole chain of* the XP immediately dominating the U-binder of the indefinite c-commands the pronoun.

However, the informal formulations in (14) and (15) suffice since we refer to the S-Structure representation of the relevant sentences in the discussion that follows.

¹⁰ Occurrence of *any* is also constrained by some version of specificity condition (cf. Fiengo and Higginbotham (1981)). As the ungrammaticality of (ia) tells us, *any* may not occur in an NP that obligatorily has a specific reading, even though the negative c-commands it:

- (i) a. I didn't give Jack a picture of *anybody*.
 - b. *I didn't give Jack this picture of *anybody*.
- (Ross (1967))

¹¹ For other licensors of *any*, see Ladusaw (1979) and Linebarger (1980, 1987).

¹² The relevant relation is not merely a linear-order relation of 'precedence', as we will see in Section 3.

¹³ Whether *any* is 'existential' or 'universal' has been a controversial issue among linguists. Linebarger (1980) and Carlson

(1980) have convincingly claimed that *any* is 'existential' at least in certain contexts like negative sentences and conditionals.

¹⁴ See Belletti and Rizzi (1988) for the same effect in psych-verb constructions.

¹⁵ In (33a), the antecedent NP *Phil Collins and Paul McCartney* is in fact embedded within the PP headed by *to*, and hence does not seem to c-command the NP-trace of the subject. However, certain PPs are 'transparent' with respect to c-command so that NPs in such PPs behave as if their c-command domain extends beyond them. The following examples tell us of the point:

- (i) *It should have bothered *her_i* that *Rosa_i*'s driving is dangerous.
- (ii) *It should have occurred [to *her_i*] that *Rosa_i*'s driving is dangerous.
- (iii) Someone was shouting [behind *her_i*] that *Rosa_i*'s driving was insane. (Reinhart (1983))

While coreference is permitted in (iii), where the pronoun embedded in the locative PP does not c-command the antecedent, anaphora is blocked in (ii), on a par with (i) where the pronoun c-commands the antecedent NP. See Takano (to appear) for an account of this fact and similar phenomena in terms of 'weak c-command'.

¹⁶ The following example appears problematic to our analysis:

- (i) **Any doctor* wasn't available.

The negative c-commands the trace of *any doctor* left in a VP internal position so that U-binding should hold between the negative and the subject. Likewise, chain-binding of a reciprocal in the subject position is not permitted, as we see in (ii):

- (ii) **Each other_i* was available to *Paul McCartney and Phil Collins_i*.

Binding of *each other* should hold since *Paul McCartney and Phil Collins* (weakly) c-commands the trace of *each other* in the VP.

However, (ii) is ruled out by the Binding Condition C since *Paul McCartney and Phil Collins* is illegally A-bound by *each other*. A possible way to rule out (i) is to assume that a condition similar to the Condition C is at work in U-binding: specifically, a condition saying that a U-binder must not be c-commanded by the U-bindee whose referential value it determines. (i) is then ruled out since *any doctor* illegally c-commands the U-binder *n't*.

¹⁷ As we will see in Section 5 on intersentential anaphora, an *any*-phrase and a pronoun need not share the same token or instance of U-binding operator. In the present section, however, we deal with only those cases where the same operator U binds the two NPs.

¹⁸ Yuji Takano (p.c.) has pointed out to me that anaphora is not permitted in (38b) if *anyone* and *him* are replaced with each other, even under the *NOT>BECAUSE* reading:

(i) **Mary is not teasing him_i because she hates anyone_i.*

I do not know at this point whether any syntactic factor or any other factor inherent to the semantics of indefinite NPs is involved in the impossibility of the anaphora in (i). I will leave the matter for future research.

¹⁹ Let us also count modal auxiliary verbs as a class of U-binders, as they are regarded as operators upon which indefinite NPs are referentially dependent. An apparent problem that must be solved is raised by the contrast in the interpretation of the indefinites in the following examples:

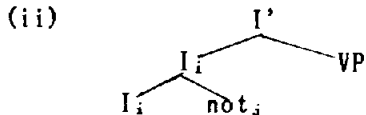
- (i) a. *A woman will buy this dress.*
 b. *A woman didn't buy this dress.*

Besides its specific interpretation, *a woman* in (ia) has the nonspecific interpretation where it depends referentially upon the modal *will* ("It will be the case that a woman buys this dress."). On the other hand,

the indefinite in (ib) does not have a nonspecific reading where it is negated ("Not a woman is such that she bought this dress."), the only possible reading being that for some particular woman, she did not buy this dress. In our terms, while *a woman* is not U-bound by the negative since it is not c-commanded by it, the modal auxiliary in (ia) must somehow be able to U-bind the indefinite in the subject position.

To account for this, let us appeal to the structural difference between the modals and the negative. As assumed in Pollock (1989) and a series of Chomsky's works, modal auxiliaries are generated under INFL, so that they are an 'inherent' element of it. On the other hand, the negative is generated under the head of 'NegP', postulated as the complement of INFL. Thus the negative is not an 'inherent' element of INFL, even if it adjoins to the INFL node.

A possibility is to make use of SPEC-HEAD Agreement between INFL and the SPEC of IP as an additional device to encode a U-binding relation. In (ia), the relevant agreement holds between *will* and *a woman* so that the former can U-bind the latter. However, the INFL in (ib) does not bear the index of the negative since the negative is only adjoined to it, as illustrated by:



The index on *not* does not participate in SPEC-HEAD Agreement here, since what is relevant to the process is the head I.

The idea laid out above may be extended to cover the account of variable quantificational force of *wh*-phrases. Specifically, we may determine the quantificational force of the *wh*-phrases in the following examples by making use of the syntactic agreement between the head C and the SPEC of CP:

- (iii) a. What did you buy? (the 'interrogative' *wh*)
 b. Whatever you may buy, ... (the 'universal' *wh*)

While the abstract question operator *Q* provides the interrogative reading of the *wh*-phrase in (iiia), the universal interpretation of the *wh* phrase in (iiib) is determined by the universal quantifier that is lexically realized as *ever*. See Nishigauchi (1986) for a similar approach to the phenomena.

²⁰ Note that it is possible in (54), (56), and (57) to replace *him* with *them* to refer to the definite part of the *any*-phrases. For example:

- (i) Professor Simon hasn't invited any of [*his students*]_i to his house these days. But if *they*_i write an excellent paper, he will certainly hold a party.

The existence of this possibility does not affect our discussion. In the case of (i), what *they* refers to is the set of Prof. Simon's students but not the set of students who Prof. Simon has invited.

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