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CONSTRAINTS ON THE DISTRIBUTION OF ANAPHORS*

1 INTRODUCTION

This paper is an attempt to characterize the distribution of anaphors[1] in English in the cognitive framework, and to show that many problematic cases, as well as the standard ones, can be appropriately handled in this framework. The difficulty associated with the problem of anaphor distribution comes from the fact that while the behavior of some types of anaphors seems to be dealt with in syntactic terms, there exist certain cases which are considered "exempt", in that they seem to be best handled in terms of the discourse principles.

Chomsky's (1981) Binding Theory, and many modified versions that followed it, was an attempt to place anaphors under a set of syntactic conditions. This theoretically straightforward solution, however, is known to leave a variety of counterexamples unexplained, which again has turned many researchers' attention to the functional solution based mainly on the viewpoint effect, pioneered by Cantrall (1969, 1974).

In some of the recent works such as Pollard and Sag (1992, 1994), Reinhart and Reuland (1993), and Dalrymple (1993), we see a kind of division of labor regarding argument anaphors, roughly speaking, as controlled by syntactic principles, and others by functional ones. Although this seems to be descriptively more adequate than the purely syntactic solution, an inevitable question yet to be asked is why there must be such a division of labor in the first place. This question then leads us to an inquiry into the existence of more general principles responsible for both types of anaphors, which could integrate apparently distinct motivations for the two approaches.

In this paper, I will develop an analysis of the distribution of anaphors based on the framework of Cognitive Grammar outlined by R. W. Langacker (1987, 1991). It is important at this moment to note that Cognitive Grammar sees language as an integral part of our cognitive ability, and that the linguistic analysis based on this approach does not resort to psychologically ungrounded assumptions, and is devoid of

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[1] The term *anaphor* refers here to both reflexive and reciprocal pronouns, though, strictly speaking, it has been noted that the distribution of reflexives and reciprocals is not exactly identical. See Lebeaux (1983), Kuno (1987), and Dalrymple (1992), among others.

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any cognitively unmotivated artifacts. In this sense, it provides reasonable theoretical foundations for a variety of constraints on linguistic phenomena proposed by the functional tradition of linguistic analysis.

In section 2, I will review the problems and the previously proposed analyses of the distribution of anaphors. After introducing the theoretical background necessary for the purpose of this paper and how anaphors are to be treated in it in section 3, I will show in section 4 that both standard and problematic data are captured in this framework.

2 CHARACTERIZATION OF THE PROBLEMS

In this section we will review some of the previous approaches to the anaphor distribution, trying to clarify what can and cannot be handled by them.

2.1 The Chomskyan Binding Theory

Chomsky's (1981:188) formulation of the Binding Conditions, shown in (1), intends to place anaphors under a set of theoretically straightforward conditions. The notion of binding is defined as (2), which is described in terms of a structural condition of c-command given in (3). Although the Binding Conditions have been subject to modification, the basic spirit of these is virtually unchanged even in the recent Minimalist framework[2].

(1) A. An anaphor is bound in its governing category.
B. A pronominal is free [i.e. not bound] in its governing category.
C. An R-expression is free.

(2) α binds β if and only if α c-commands β, and α and β are coindexed.

(3) α c-commands β if and only if neither one dominates the other, and every branching node that dominates α also dominates β.

Assuming for the moment that the governing category is the minimal S(entence) or NP containing the anaphor/pronoun, (1) can handle the following examples[3].

(4) a. John$_i$ hit *him$_i$/himself$_i$.
b. John$_i$ said that Mary admires him$_i$/*himself$_i$.
c. John$_i$'s mother disciplines him$_i$/*himself$_i$.

In (4a) *him* is not allowed by Condition B because it is bound in the governing

[2] In the Minimalist framework, which abandons D- and S-structures, the Binding Conditions are treated as interpretive rules applied at LF. See, for example, Chomsky (1995:211).

[3] In this paper, intended coreferential reading is shown by indexing.

category, which is the whole sentence in this case, and Condition A allows *himself*, which is duly bound within the governing category. (4b) is the case where the antecedent is outside the governing category, the embedded clause, making only the pronoun acceptable. In (4c), with *John* embedded in the subject NP, the c-command relation is not established between the antecedent and the pronoun/anaphor. Hence, only the pronoun is allowed.

The following type of data, however, necessitated the refinement of the definition of the governing category.

(5) a. They$_i$ saw [each other$_i$'s pictures].
b. They$_i$ saw [pictures of each other$_i$].

If the governing category is the minimal S or NP, (5a) and (5b) are wrongly predicted to be ungrammatical because anaphors are bound by the antecedent located outside the minimal NP. Chomsky's (1981:211) solution was to define the governing category so that it must include an accessible SUBJECT.

(6) β is a governing category for α if and only if β is the minimal category containing α, a governor for α, and a SUBJECT accessible to α.

An accessible SUBJECT is, roughly speaking, either the c-commanding subject or Agr[4]. The import of (6) is that it extends the governing category of the examples like (5) to the entire sentence, because the bracketed NP does not include an accessible SUBJECT. Therefore, the matrix subject becomes the next available candidate for the SUBJECT and renders the entire sentence the governing category, (5a) and (5b) are allowed because the anaphors are bound within it.

Note that the Binding Conditions predict that *(i)* the anaphors and pronouns are in complementary distribution, because the former must, and the latter must not, be bound within the governing category, and that *(ii)* the antecedent always c-commands the anaphor. These predictions, as shown in the following subsections, are not always borne out.

2.2 On the Complementary Distribution

Although the complementary distribution expected by the Binding Conditions is in fact observed for the argument anaphors as exemplified in (4), it has been noted in the literature that the possessive reciprocals are problematic.

(7) They$_i$ saw their$_i$/each other$_i$'s pictures. (Huang 1983: 554)

Huang (1983) tries to explain the noncomplementary distribution of anaphors and pronouns as in (7) by stipulating that the governing category of the anaphor is not identical with that of the pronoun. He defines the governing category as (8).

[4] See Chomsky (1981: 211) for detailed discussions.

(8) β is a governing category for β if and only if α is the minimal category containing β, a governor of β, and a SUBJECT that, if β an anaphor, is accessible to β. (Huang 1983: 557)

Given (8), the accessibility is required only for the SUBJECT for the anaphor. In (7), then, *each other* cannot be an accessible SUBECT because it cannot c-command itself. Therefore, the whole sentence, which contains the next candidate *they*, becomes the governing category. Being bound within it, *each other* is allowed. For the pronoun *their*, on the other hand, since the accessibility is not required, *their* itself can be the SUBJECT, making the object NP its governing category. The pronoun is also allowed because it is free within it.

In addition to the lack of independent motivations, Huang's stipulation (8) cannot handle the picture NP cases like (9) in a reasonable way, because there is no candidate for SUBJECT in their object picture NPs. The natural interpretation of (8), therefore, extends the governing category to the whole sentence in (9a) and (9b) for both anaphors and pronouns, wrongly predicting the complementary distribution[5].

(9) a. They$_i$ saw pictures of them$_i$/each other$_i$.
b. They$_i$ expected that pictures of them$_i$/each other$_i$ would be on sale.
(Huang 1983: 557)

Chomsky's (1986) solution to the noncomplementary distribution in the picture NP example was more realistic. He proposes an optional PRO-like subject in the picture NPs, allowing two structures (10a) and (10b).

(10) a. They$_i$ saw [PRO pictures of them$_i$/*each other$_i$].
b. They$_i$ saw [∅ pictures of *them$_i$/each other$_i$].

This PRO can act as a possible SUBJECT, and makes the object picture NP the governing category in (10a), where the PRO is present, while extending the governing category to the whole sentence in (10b), where it is absent. This allows the noncomplementary distribution.

This analysis is said to be able to handle the fact that for some verbs only the anaphors are allowed in the environment identical with (10) above.

(11) a. They$_i$ told [a story about *them$_i$/themselves$_i$].
b. They$_i$ took [a picture of *them$_i$/themselves$_i$].

It is claimed that the verbs like *tell* and *take* require a PRO coindexed with the subject as shown in (12). This makes the object picture NP the governing category, and since the PRO is coindexed with the subject, and therefore with the anaphor and the pronoun in this case, it can bind both of them, and the anaphor is allowed.

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[5] Huang (1983: 558) therefore had to propose an obviously unnatural stipulation that the head of the maximal phrase, *pictures* in (7b) and (7c), can be its SUBJECT.

(12) They$_i$ told [PRO$_i$ story about *them$_i$/themselves$_i$].

However, Kuno (1987) and Pollard and Sag (1992) convincingly argue against this analysis. Consider (13).

(13) To replace the one she had written, John handed Mary$_i$ a description of herself$_i$ that he was sure would impress the committee.
(Pollard and Sag 1992: 269)

If there is PRO in the picture NP *a description of herself* coindexed with the subject *John* as Chomsky claims, it could not bind *herself* which is not coindexed with it. Even if we stipulate that the PRO in this position is coindexed with *Mary*, it contradicts with what the sentence means; *Mary* did not do the self-description, but it was *John* who did the description of *Mary*[6].

Not only the picture NPs, but also the pronouns and anaphors in PPs are known to show noncomplementary distribution[7].

(14) a. John$_i$ pulled the blanket over him$_i$/himself$_i$.
b. John$_i$ hid the book behind him$_i$/himself$_i$. (Kuno 1987: 153)

We have observed that the complementary distribution between anaphors and pronouns predicted by the Chomskyan Binding Conditions is not always borne out, and that the problems remain despite the modification of the theory.

2.3 On the C-Command Requirement

Since the Chomskyan Binding Conditions are defined in terms of c-command, it follows that the antecedent must always be in the position that c-commands the anaphor. But this prediction faces counterexamples.

(15) a. *John$_i$'s mother disciplined himself$_i$.
b. John$_i$'s face turned red despite himself$_i$. (Zribi-Hertz 1989: 709)
c. Her$_i$ pleasant smile gives most pictures of herself$_i$ an air of confidence.
(Reinhart and Reuland 993: 682)

In (15a) and (15b), antecedents are the possessives in the subject NP, hence structurally unable to c-command the anaphor. The acceptability of these sentences poses a serious problem to the c-command requirement.

Also problematic to the c-command requirement of the Binding Theory is the construction of so-called psychological predicates. As shown in (16), this

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[6] See also Pollard and Sag (1992: 268) and Reinhart and Reuland (1993: 685) for similar observations. Williams (1987: 152) also argues against this analysis, pointing out that this apparent control effect is seen even if the Spec position, where the PRO-like subject is supposed to occupy, is already filled.

[7] Kuno reports that the use of the anaphor in (14) implies John's intention to cover himself up with the blanket, or to hide the book behind him, but such implications are not necessarily felt when the pronoun is used.

construction is known to allow backward anaphora.

(16) a. Each other$_i$'s pictures depress the professors$_i$.
b. Pictures of each other$_i$ depress the politicians$_i$. (Grimshaw 1990: 162)

Many syntactic proposals have been presented to cope with this apparent violation of the c-command requirement. Although most of them are aimed at hypothesizing that the c-commanding relation is really established between the antecedent and anaphor in the construction under discussion, the stipulations employed by those analyses are clearly ad hoc in nature. Let us review briefly the account presented by Fujita (1993) for example[8].

Fujita stipulates that the derivation of the sentence with a verb taking a causer subject is roughly in the line of (17), where *t* stands for the trace from which an element was moved.

(17) [$_{AgrSP}$ SU [$_{AgrS'}$ AgrS [$_{TP}$ ... [$_{AgrOP}$ OB [$_{AgrO'}$ AgrO [$_{VP}$ t_{SU} [$_{V'}$ V t_{OB}]]]]]]]

In (17), the subject (SU) originates in VP and moves up to AgrSP, and the object (OB) moves from the complement position of V to the AgrOP. Notice that in this derivation the object c-command the trace of the subject (t_{SU}). Fujita's claim is that the psychological predicate construction follows the derivation shown in (17), and the c-command relation between the object and the subject trace allows the former to bind the latter. Thus backward binding results.

On the other hand, Fujita further stipulates that when the subject is not the causer, the derivation is roughly like (18).

(18) [$_{AgrSP}$ SU [$_{AgrS'}$ AgrS [$_{TP}$ ... [$_{VP1}$ t_{SU} [$_{V'}$V[$_{AgrOP}$ OB [$_{AgrO'}$ AgrO [$_{VP2}$ [$_{V'}$ V t_{OB}]]]]]]]]]

Here two VPs are present with the AgrOP between them, and the subject originates in the upper VP, moving up to AgrSP. On the other hand, the object originates in the lower VP and moves up to AgrOP. Unlike the derivation (17), no part of the object chain c-commands any part of the subject chain in (18), resulting in the impossibility of the object's binding the subject trace.

Fujita's account is inappropriate in two respects. First, as noted in Takami (1995), there is no independent motivation for the "split VP" which happens only when the subject is not a causer. Second, as noted in Kuno and Takami (1993), Fujita's analysis, as well as other similar syntactic accounts, faces empirical problems.

(19) a. * Pictures of himself$_i$ don't portray John$_i$ well.
b. To John$_i$'s disgust, the story about himself$_i$ in the Boston Globe portrayed him$_i$ as a small town politician.
(Kuno and Takami 1993: 157)

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[8] Similar strategies are taken by Belletti and Rizzi (1988) and Pesetsky (1995).

Following Fujita's argument, (19a) could be ruled out by saying that the verb *portray* does not take a causer subject and therefore follows the derivation pattern of (18). If this is the case, then (19b) too has to be incorrectly ruled out for the same reason[9].

The following example poses another problem to the c-command requirement.

(20) John talked to Mary$_i$ about herself$_i$.

In (20), *herself* is coreferential with *Mary* despite the fact that *Mary* cannot c-command *herself* because it is embedded in a PP. If we try to rescue the c-command requirement, we would have to resort to the desperate solution that the PP node is somehow invisible for c-command, or that *talk to* is reanalyzed as a single verb[10].

So far, we have observed the examples in which antecedents are present but do not c-command the anaphors. However, it is known that the first and second person non-argument anaphors can occur without the antecedents even in the same sentence.

(21) a. This picture of me/myself will make John happy.
b. This picture of you/yourself will make John happy.
(Cantrall 1977: 22)

Interestingly, however, if the anaphors are the arguments of the verb, they always need antecedents.

(22) a. *John saw myself/yourself.
b. *She gave myself/yourself a dirty look.

Even the third person anaphors, when they are not the arguments, allow their antecedents to be in the preceding discourse, not in the same sentence.

(23) John$_i$ was furious.
The picture of himself$_i$ in the museum had been mutilated.
(Pollard and Sag 1992: 268)

(23) clearly shows that the structural account of the distribution of picture noun reflexives is not appropriate.

Given these facts discussed above, we have to conclude that the Chomskyan Binding Conditions do not satisfactorily account for the data. The limit of the structural account is obvious, and something else must be working behind the scene. In the next subsection, we will briefly review the attempts to approach the anaphor distribution from different perspectives.

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[9] Takagi (1995) and Takami (1995) propose a functional solution to backward binding in the psychological predicate sentences, which are compatible with the analysis to be shown later in the present paper.

[10] The reanalysis solution cannot be maintained in face of the examples like *I spoke angrily to the men about each other*, where an adverb intervenes between the verb and the PP.

2.4 Syntactic/Logophoric Distinction

We have observed thus far the following facts.

(i) The complementary distribution of anaphors and pronouns is observed only in examples of argument anaphors, while anaphors embedded in NPs or PPs are problematic.
(ii) The c-command requirement encounters counterexamples, especially when anaphors are not arguments of a verb. Non-argument anaphors even do not need antecedents in the same sentence.

Given these observations, Pollard and Sag (1992, 1994) and Reinhart and Reuland (1993) discarded the binding theory defined configurationally in terms of c-command and governing category, and reformulated it in terms of the relational notions. The import of their analyses is the claim that the "grammatical" anaphors and "logophoric" anaphors must be distinguished, and must be treated on the different grounds. Unfortunately, it is common in this line of studies that the "logophoric" anaphor are not given any systematic account, no more than the suggestion that the viewpoint effect is involved in their distribution.

2.4.1 Reinhart and Reuland (1993) In this subsection, let us briefly review Reinhart and Reuland (1993), in which they draw a line between "grammatical" and "logophoric" anaphors, and formulate their version of binding conditions only for the former. In their account, anaphors that do not "reflexivize" a predicate are treated as "logophoric", and claimed to be constrained by the discourse principles. Their version of binding conditions, therefore, applies only to the "grammatical" anaphors. (24) is their version of Binding Conditions.

(24) *Reinhart and Reuland's Binding Conditions*
A. A reflexive-marked predicate is reflexive.
B. A reflexive predicate is reflexive-marked.

A predicate is reflexive-marked if and only if one of its arguments is an anaphor, and a predicate is reflexive if and only if two of its arguments are coindexed. Simply put, (24) amounts to say that if one of the arguments is an anaphor, the predicate must have another argument coindexed with it, and if two of the arguments are coindexed, one of them must be an anaphor. Consider (25).

(25) a. *John$_i$ hit herself$_j$.
b. John$_i$ hit himself$_i$/*him$_i$.

In (25a), the verb *hit* constitutes a reflexive-marked predicate since one of its arguments is an anaphor, and therefore, it has to be a reflexive predicate. Condition A rules out (25a) because *hit* is not a reflexive predicate as none of its arguments are coindexed. In (25b), the pronoun is not allowed because in this sentence *hit* constitutes a reflexive predicate, and therefore Condition B requires it to be

reflexive-marked. The anaphor is allowed there because it makes the predicate reflexive-marked[11].

On the other hand, their binding conditions have nothing to say about the following examples, where anaphors and pronouns are not in complementary distribution, because in (26) anaphors and pronouns are not the arguments of a predicate.

(26) a. Max_i saw a gun near $himself_j/him_j$.
b. Max_i likes jokes about $himself_i/him_i$.
c. $Lucie_i$ saw a picture of $herself_i/her_i$.
(Reinhart and Reuland (1993: 661)

These "exempt" anaphors are said to be "logophoric", and subject to the discourse principles, although Reinhart and Reuland do not attempt to characterize them explicitly. They merely note that these anaphors are subject to the "speaker's viewpoint", which has been extensively investigated by the functional analyses of anaphors. In the next subsection, let us look at how the speaker's viewpoint works in the distribution of anaphors.

2.4.2 Viewpoint When we observe an event, we have two viewing options: we can place ourselves at the neutral position, equidistant from all participants of the event, or we can observe the event from the position of one of the event participants. To see this difference, let us take for example an event in which an object C moves from a position A to another position B.

(27) A --- C --->B

Some of the possible expressions that describe this event are:

(28) a. C goes from A to B.
b. C comes to B from A.
c. C moves from A to B.

It is said that *go* is used when the speaker is at the source of the movement, while *come* is used when he is at the goal[12]. However, the fact that the following sentences are acceptable cannot be explained by these conditions.

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[11] The description here is simplified for the sake of discussion. Reinhart and Reuland say that their condition B applies to the "semantic" predicate, while condition A applies to the syntactic predicate. In the following sentences,

(i) Max_i rolled the $carpet_j$ [over him_i/$himself_i$]
(ii) Max_i rolled the $carpet_j$ [over *it_j/$itself_j$]

the bracketed parts constitute a semantic two-place predicate, with one of the arguments, coindexed with *the carpet*, syntactically unrealized. Their condition A does not apply to this predicate, allowing *himself* in (i) *itself* in (ii) as logophoric. Since their condition B does apply to these semantic predicates, the pronoun is not allowed in (ii), where it is a reflexive semantic predicate and has to be reflexive-marked. The pronoun is allowed in (i) because this is not a reflexive predicate.

[12] See Fillmore (1972) and Kamio (1990) for the discussion on *come* and *go*.

(29) a. A stranger came to my daughter's apartment last night.
b. My daughter went to her friend's apartment last night.

Sentences in (29) can be uttered in the situation where the speaker is not at his/her daughter's place. This fact is explained only by assuming that the speaker has placed his viewpoint at his daughter's position, and (s)he describes the event from that place.

As shown in the above example, researchers in discourse study have revealed that the speaker can take either the neutral viewpoint, equidistant from the event participants, or one of the participants' viewpoint. This distinction and its effect have been discussed in Kuroda (1971), Cantrall (1974), Kuno and Kaburaki (1977) and Kuno (1987), among others.

How the viewpoint effect manifests itself in the behavior of anaphors was first discussed in Cantrall (1969, 1974). His hypothesis is that, when either of them is possible, the use of the anaphor necessarily implies the viewpoint of the referent of the anaphor. Let us compare the sentences below.

(30) a. The adults$_i$ in the picture are facing away from us, with the children placed behind them$_i$.
b. The adults$_i$ in the picture are facing away from us, with the children placed behind themselves$_i$. (Cantrall 1974: 146)

According to Cantrall, (30a) is ambiguous between the interpretation that the children are located between the adults and the camera position on the one hand, and the interpretation that the children are located beyond the adults and cannot be seen from the camera position on the other. However, (30b) allows only the former interpretation, in which the event is described from the position of the referent of the anaphor, namely, *adults*.

Kuno (1987) incorporates this effect into his theory of empathy, and hypothesizes the following constraint on the distribution of reflexives. The term "empathy" is basically the same as viewpoint, or the "camera angle" in his terms.

(31) *Kuno's Empathy Constraint on Reflexives*
A sentence that contains a reflexive pronoun that is not a direct object of a verb requires that it be interpreted as one produced from the camera angle of the referent of the reflexive in the tense and aspect that requires an explicit camera angle with respect to the event described in the sentence.
(Kuno 1987: 158)

Following examples show that the reflexive requires its referent's viewpoint.

(32) a. ?Mary talked to John$_i$ about himself$_i$.
b. ??Mary talked to a student$_i$ about himself$_i$.
c. *?Mary talked to someone$_i$ about himself$_i$. (Kuno 1987: 158)

Since it is difficult for the speaker to take the viewpoint of an indefinite participant,

sentences in (32) become more awkward as the referent of the reflexive goes more indefinite. This clearly shows that the speaker's viewpoint is involved in the reflexives in (32).

It should be noted that Kuno makes it clear that his empathy constraint does not apply to the reflexive that is the direct object of a verb. This observation is confirmed by the following type of example.

(33) a. Someone$_i$ killed himself$_i$.
b. Someone$_i$ seated himself$_i$ next to Mary. (Kuno 1987: 157)

In spite of the indefinite antecedent *someone*, reflexives in (33) are perfectly acceptable, showing that the viewpoint effect is not seen when reflexives are direct objects. Although Kuno does not suggest any reason why the viewpoint effect is not seen here, this is obviously a question to be explained.

One of the problems of the grammatical/logophoric dichotomy is the status of the *about*-phrase in the example like (34).

(34) Mary talked to John$_i$ about himself$_i$/*him$_i$.

If we follow Reinhart and Reuland's approach, the reflexive in the *about*-phrase is clearly a grammatical anaphor because it is in complementary distribution with the pronoun as in (34). However, as noted in Kuno's examples in (32), it also shows the gradation in acceptability in accordance with the definiteness of its referent, which is a property of the logophoric anaphor. This apparent paradox will be discussed in 4.7.

2.4.3 Summary of the Problems In this section, we have seen that the Chomskyan Binding Conditions defined in terms of c-command and governing category face many empirical problems, and that the attempts to rescue this approach are not successful. This observation, together with the functional tradition of regarding reflexives as representing the speaker's viewpoint on an event participant, necessitated some researchers to distinguish "grammatical' and "logophoric" anaphors.

The approaches that distinguish "grammatical" and "logophoric" anaphors are descriptively more adequate than the purely structural account such as Chomsky's Binding Conditions. But they leave at least two problems. First, it does not shed any light to the common function possibly shared by both types of anaphors. Second, it does not explain what factors are working behind the scene that make "grammatical" and "logophoric" anaphors behave so differently. The former shows the complementary distribution with pronouns, but the latter does not always show this property. The viewpoint effect is clearly observed only for the latter, but never for the former.

In sum, to say that "grammatical" and "logophoric" anaphors are just differently categorized is devoid of explanatory power. We need to investigate in what is the shared property between them, and what makes them behave differently. We will see in what follows that a framework based on Cognitive Grammar can provide an account for these problems.

3 ANAPHORS IN COGNITIVE GRAMMAR

From this section on, our discussion will be based on Cognitive Grammar, a version of Cognitive Linguistics developed by R. W. Langacker and others. In 3.1, we will review some fundamental notions of Cognitive Grammar necessary for our treatment of the anaphor distribution, and in 3.2, it will be shown that the viewpoint effect can be interpreted as a manifestation of our reference point ability. How anaphors are to be treated in CG will be discussed in 3.3, based on which our analyses of individual phenomena follow in the next section.

3.1 Cognitive Grammar

Cognitive Grammar (CG) regards language as inseparable from the aspects of general cognitive processing, rather than hypothesizing some genetically coded innate language module[13]. Since language is viewed in CG as symbolic in nature, which is composed only of the semantic and phonological structures, no other artificial levels of representation are hypothesized.

One of the tenets of CG is that the psychological notion such as the figure/ground organization is prevalent in the semantic and grammatical structures of language. It is known that our perception does not give everything in the observed scene the equal magnitude of prominence, but rather, regards a substructure of it as "standing out" (i.e. the figure) , from the remainder of the scene (i.e. the ground).

A manifestation of the figure/ground organization is the contrast between the *profile* and the *base*, which characterizes the semantic structure of the linguistic expression. The base of an expression is the conceptual structure that is indispensable for the characterization of the expression, upon which the prominent part, the profile, is interpreted. The concept of [ARC], for example, is the profiled part of the base concept of [CIRCLE], and the concept of [PARENT] is construed on the base of the concept of the family tree[14].

CG assumes that we conceptualize the world as composed of discrete objects and the relations between them. A nominal expression profiles a *thing*[15], while verbs, prepositions, adjectives and adverbs profile *relations*. The relation profiled by a verb, called the *process*, is distinguished from other atemporal *relations* in that it develops through the conceived time. Let's examine next the nature of this processual relation.

3.1.1 Action Chain This world is made up of physical objects that interact with each other. Assuming we conceptualize the world this way, Langacker (1991) proposes a notion of an *action chain*, diagrammed in Fig. 1.

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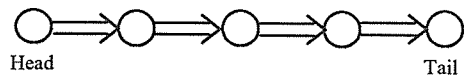
[13] Langacker makes no commitment to the existence of the "special language module". His position is that it should, if it exists at all, be embedded in the general psychological matrix, and that language is explainable without resorting to the dichotomy between linguistic ability and other aspects of cognitive processing. See Langacker (1987: 12-14).

[14] See Langacker (1987: 183-186) for a detailed discussion.

[15] Used in a technical sense. See Langacker (1987: 183-213).

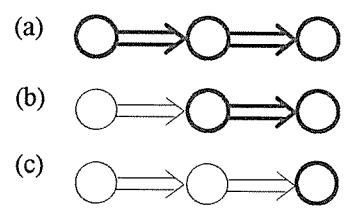


<Fig. 1> Action Chain (Langacker 1991:283)

Diagrammed in Fig.1 are the participants (shown as circles) and the transmission of energy between them (shown as double arrows) from the head through the tail of the action chain. It is claimed that an action chain characterizes a prototypical finite clause. Let us consider (35).

(35) a. Sharon dried her hair with the blower.
b. The blower dried her hair.
c. Her hair dried. (Langacker 1991: 332)

The event described in the sentences above are diagrammed in Fig. 2, where the profiled part is shown in bold lines. The head of the action chain corresponds to the agent, the second and the third (tail) participants correspond to the instrument and the patient respectively.



<Fig. 2> (After Langacker 1991: 333)

The sentences in (35) are different only in which part of the action chain is profiled. We obtain here a generalization that the head of the profiled part of the action chain is linguistically realized as the subject, and the tail as the object. Since the subject is defined in CG as the clausal figure, and the object as the second prominent participant of the clausal relation, if only the tail of an action chain is profiled as in (c), it is realized as the subject, not as the object.

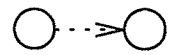
For our purpose, it is important to note here that the relation represented by the energetic interaction, linguistically coded by a verb, is inherently directional. If the energy flows from a participant X to another participant Y, then the inverse energy flow does not coincide.

However, sentences in (36) do not seem to involve any energetic interaction since the object is in no way affected.

(36) a. I remember you very well.
b. I saw a tiger in the bush.

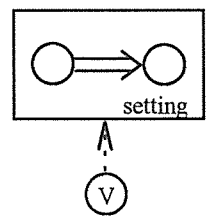
In these cases, what is involved is the *mental contact*, stated in Langacker (1991: 550) as "singling out an entity for individual conscious awareness." This relation is

notationally represented in a dashed arrow. Note that this relation is also inherently directional.



<Fig.3> Mental

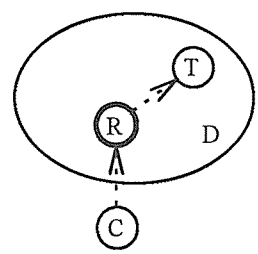
3.1.2 Stage Model A clausal expression codes an event viewed by the speaker (and the addressee). CG captures this situation by analogy with the viewer watching a play on the stage, which Langacker (1991: 284) calls the *stage model.* Diagrammed in Fig. 4 is the *canonical event model*, where the viewer (V) observes the event on the "stage" called the *setting* from an external vantage point.



<Fig. 4> Canonical Event Model (After Langacker 1991: 285)

The relationship between the viewer and the observed event represented by the canonical event model is highly schematic; the viewer makes mental contact with the observed event as a whole. Let us next examine the nature of the mental contact in more detail.

3.1.3 Reference Point Model When we establish mental contact with an entity, we tend to do so by invoking the conception of another entity that is cognitively more salient and located in its vicinity. This ability to use one entity as a reference point for another is schematically diagrammed in Fig. 5.



C: Conceptualizer
R: Reference Point
T: Target
D: Dominion

<Fig. 5> Reference Point Model (Langacker 1993: 6)

In Fig. 5, the conceptualizer C makes mental contact with the target T by first doing so with the more salient reference point R. The circle labeled D is called the dominion, the set of entities for which R is available as a reference point.

Langacker (1993) argues that the possessive construction manifests the reference

point structure, in which the entity coded by the possessive NP functions as the reference point. Observe the contrast between (37a) and (37b).

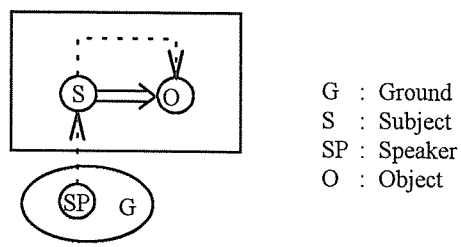
(37) a. the boy's watch; the dog's tail; the cat's fleas
b. *the watch's boy; *the tail's dog; *the fleas' cat (Langacker 1993: 8)

The anomaly of the examples in (37b), in contrast with the acceptable ones in (37a), is reasonably accounted for by the assumption that the possessive element functions as the reference point, because in (37b) the less salient entities are chosen as the reference points for the targets of more salient entities. For instance, *the tail's dog* is anomalous because in the part-whole relationship the whole is generally more salient than the part, whereas *the tail's dog* requires the less salient part to be the reference point.

3.2 Viewpoints and the Reference Point Model

As we discussed in 2.4.2, when describing an event in language, the speaker can observe the event either from the neutral vantage point or from the position of one of the event participants. Let us call the former the *external viewpoint* and the latter the *internal viewpoint*.

This viewpoint distinction fits comfortably into the reference point model. Let us first consider the internal viewpoint, diagrammed in Fig. 6.



<Fig. 6> Internal Viewpoint

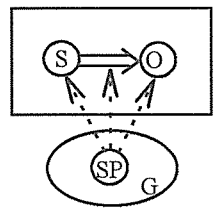
Shown as G is the place called the *ground*, the immediate circumstance in which the speech event takes place, and from which the speaker and the addressee (not shown in Fig. 6) observe the on-stage event.

In Fig. 6, the subject functions as the reference point for the speaker in G to observe the event. Since in CG the subject is the most prominent participant in the clause, it is natural for the speaker in G to use the subject as the reference point to establish mental contact with the rest of the clause[16]. It is important to note here that the mental path that goes from the subject participant is actually a part of the speaker's mental contact, not the subject participant's own mental contact.

Another viewing possibility, the external viewpoint, is also described in terms of the stage model. As diagrammed in Fig. 7, the speaker does not use an on-stage

[16] van Hoek (1992, 1995) discusses the subject's likelihood to be the clausal reference point.

participant as a reference point, but lets himself be more prominent than the on-stage participants, and becomes the reference point for the whole clause. In a sense, the ground is more subjectively construed than the internal viewpoint option[17].



<Fig. 7> External Viewpoint

That the subject does not serve as the reference point in this viewpoint arrangement does not contradict with the CG characterization of the subject as the most prominent participant in the clause. The choice of the subject is made based on the prominence within the on-stage region. In spite of its prominence within the on-stage region, the subject in this case is included in the same dominion with the object in which the off-stage speaker is the reference point. Therefore, the object is directly accessible from the speaker without using the subject as a reference point.

3.4 The Function of Anaphors

If a relation involves two entities, and if the relation between them is either a process or a mental contact, then they are inherently directional. Basically following Langacker (1991), van Hoek (1992), and Kemmer (1993), I assume that a directional relation schematically requires its participants to be referentially distinct, as shown in Fig. 8 (a). If, contrary to this requirement, the two participants are referentially identical, the anaphor is used for the endpoint participant of the relation to show the markedness of the relation. Let us call this the *reflexive relation.*

Two-Paticipant Relation Reflexive Relation

<Fig. 8>

Note that the reflexive relation is not limited to the verbal processual relation, but it also applies to the relation of mental contact, which is also inherently directional.

If this assumption is correct, we obtain natural descriptive conditions for the distribution of anaphors, stated below, which will be called Condition A and B in the rest of this paper.

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[17] For the CG characterization of subjectivity, see Langacker (1990: 93-95).

(38) *Conditions on Anaphor Distribution*
A. If its endpoint is an anaphor, then the relation must be reflexive.
B. If a relation is reflexive, then its endpoint must be an anaphor.

The consequences our Conditions A and B bring about covers, but of course not limited to, the cases that the standard Chomskyan syntactic Binding Conditions A and B account for, respectively.

(39) a. *Mary$_i$ said John hit herself$_i$.
b. *John$_i$ hit him$_i$.

In (39a), the embedded clause *John hit herself* is not a reflexive relation because two participants *John* and *herself (=Mary)* are referentially distinct. Our Condition A therefore does not allow the use of the reflexive here. On the other hand, in (39b), the clause *John hit him* is a reflexive relation because the two participants in the relation profiled by the verb *hit* are referentially identical. Our Condition B requires the endpoint participant to be an anaphor. The sentence is not acceptable because a pronoun is used.

To capture the distribution of anaphors, we need the notions of superiority and domain; the former determines which of the coreferential elements is to be realized as the antecedent and which as the anaphor, and the latter is to characterize the domain in which the anaphoric relation holds. The Chomskyan Binding Conditions state these notions on the syntactic structure, c-command and governing category.

In our framework, however, the relevant notions are stated on the conceptual structure; the notion of superiority by the directionality of the relation, and the notion of domain by the fact that the two relevant entities are involved in a single relation.

One of the empirical advantages of our analysis is that it can handle the cases involving the relation of the mental contact, as well as the ones of the verbal processes. Therefore, as we will see in the following section, it can be applied to the anaphors that are usually categorized as logophoric ones and excluded from the realm of the vigorous investigation.

4 Analyses

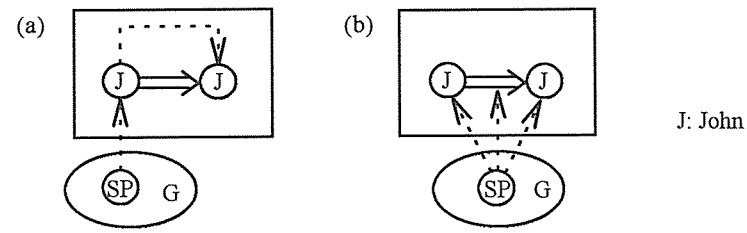
In this section, we will see how our Conditions A and B, together with the external/internal viewpoint options, capture the facts observed in 1.

4.1 Processual Participants

If two participants of a processual relation are referentially identical, only the anaphor is possible, hence in complementary distribution with the pronoun.

(40) a. John$_i$ hit himself$_i$
b. *John$_i$ hit him$_i$.

Diagrammed in Fig. 9 is how the event described in the sentence (40) is observed, in the internal (a) and external (b) viewpoint options.



<Fig. 9>

Whichever viewpoint the speaker takes, two referentially identical participants are involved in the verbal processual relation (shown as the double arrow). Since this relation is reflexive, our condition B requires that the endpoint of it, the object, be coded by an anaphor, ruling out the use of the pronoun. Thus the contrast in (40).

Note that in Fig. 9 (a) the mental contact relation and the processual relation coincide between two participants both referring to *John*. The anaphor then can be interpreted in terms of either relation. Whichever relation the endpoint participant *John* is interpreted on, only the anaphor is allowed because both relations are reflexive.

Lyons (1977) points out that even a simple reflexive case like (41) is ambiguous in interpretation.

(41) John nominated himself. (Lyons 1977: 666)

Lyons notes that (41) "can be uttered to assert that John performed the action of self-nomination. But it may also be uttered to assert that John nominated someone who, as it happens, was himself (though he may not have known or intended this)." (Lyons 1977: 666) This is what our approach predicts; if the speaker takes the internal viewpoint option as in Fig. 9 (a), the mental contact relation between the subject *John* to the object *John* exists, resulting in the former interpretation. In the external viewpoint as in Fig. 9 (b), the same mental contact relation is not present, thus the latter interpretation results.

Note that our condition A accounts for the unacceptable (42), because in this sentence an anaphor is used despite the fact that the relation it profiles is not reflexive, whichever viewpoint one may take.

(42) *John$_i$ hit himself$_j$.

Our Condition A also accounts for (43), where the subject is an anaphor, because the subject participant is the initiator, not the endpoint, of the relevant processual relation.

(43) *Himself$_i$ hit John$_i$.

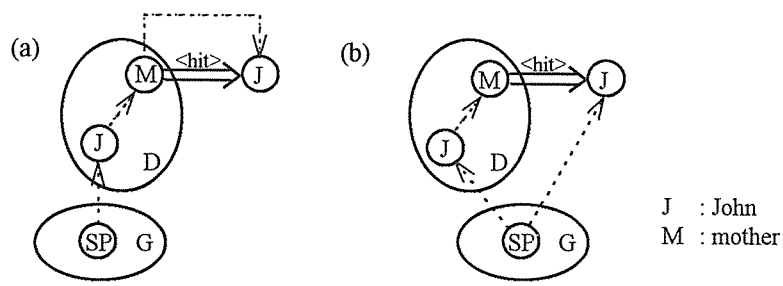
In addition, I accept the analysis put forth by Pollard and Sag (1992, 1995) that the anaphor is not allowed in the subject position for case reasons. English anaphors are morphologically accusative, hence unable to appear where the nominative case is required. In this sense, (43) is doubly ungrammatical. This point will be revisited in connection with the Japanese anaphor *zibun.*

4.2 Possessive and Picture NP Constructions

Let us next consider (44), where the possessive NP in the subject is the antecedent of the object anaphor/pronoun.

(44) a. *John$_i$'s mother hit himself$_i$
b. John's mother hit him$_i$.

As discussed in 3.1.3, the NP with a possessive element reflects the reference point construction. Thus, in *John's mother*, *John* serves as the reference point for the speaker to establish mental contact with *mother.* The event described in (44) then is diagrammed in the line of Fig. 10, in both internal and external viewpoint options[18].



<Fig. 10> *John's mother hit him/*himself*

As shown in Fig.10, *John* in *John's mother* does not participate in the verbal processual relation, but is used merely as the reference point to establish mental contact with *mother.* The reason why the anaphor is never allowed in this environment is now obvious. In Fig. 10, whichever viewpoint the speaker takes, any relation the object *John* participates in as its endpoint is not a reflexive relation. Therefore, to express the object as an anaphor, as in (44a), is not allowed by our Condition A.

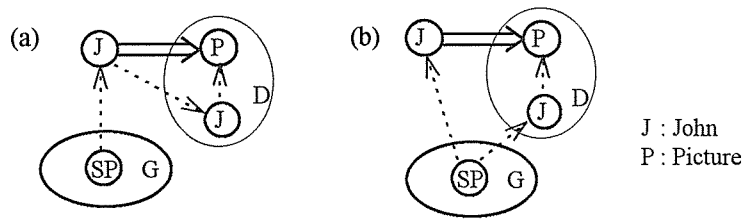
As observed in 2.2, anaphors in the picture NP, or the possessive construction, are problematic for the syntactic account because they are not always in complementary

[18] In Fig. 10, as well as in most of the figures in the rest of this paper, the setting is omitted for the simplicity of representation.

distribution with pronouns.

(45) a. They$_i$ saw their$_i$ pictures.
b. They$_i$ saw each other$_i$'s pictures.
(46) a. John$_i$ saw pictures of him$_i$.
b. John$_i$ saw pictures of himself$_i$.

Let us assume, following Langacker (1993, 1995), the entities linked by the preposition *of* also constitutes a reference point construction[19]. Thus in *pictures of John, John* functions as the reference point for *pictures.* Diagrammed in Fig. 11 is the event described by the sentences in (46) in internal and external viewpoint options[20].



<Fig. 11> *John saw pictures of him/himself*

In Fig. 11, the object NP constitutes a reference point construction. Therefore, the mental path which is directed to it has to first reach the reference point, *John*. If the speaker takes the internal viewpoint option, as in Fig. 11 (a), then a mental contact relation is established between two referentially identical participants, both referring to *John*. Since this is a reflexive relation, and our Condition A allows its endpoint participant coded by an anaphor, as in the example (46b). On the other hand, if the external viewpoint option is taken, as in Fig. 11 (b), since the relation *John* participates in as its endpoint is not reflexive, our Condition A does not allow an anaphor to be used. The pronoun is used in this case, and (46a) results.

Seemingly problematic to our analysis is the existence of the example of the following kind.

(47) a. *They$_i$ took a picture of them$_i$.
b. They$_i$ took a picture of themselves$_i$.
(48) a. *They$_i$ told stories about them$_i$.
b. They$_i$ told stories about each other$_i$.

Since these sentences seem to have the same conceptual structures as those in (45) and (46), our analysis would predict both anaphors and pronouns are allowed, contrary to the fact.

---

[19] Langacker (1993: 13) suggests that the preposition *of* designates an intrinsic relationship between two entities, and that "the more intrinsically one entity figures in the characterization of another, the more likely it is to be used as a reference point for it."

[20] Although no energetic interaction is involved in the sentences in (45) and (46), the verbal relation is shown as the double arrow in Fig. 20 for the sake of simplicity of representation.

I would like to attribute the contrast between (a) and (b) in (47) and (48) to the nature of the event described by them. To tell a story about someone, or to take a picture of someone is a type of event which cannot be carried out without the agent's conscious awareness to do so. Langacker (1995) notes:

(49) ... the likelihood of an entity being adopted as a reference point increases when it itself is a viewer. Since a viewer (*V*) makes mental contact with the target (*T*) being viewed, conceiving of a viewing relationship (*V-->T*) encourages the conceptualizer (C) to follow a co-aligned mental path that also leads from *V* to *T*. (Langacker 1995: 200)

In the type of event as (47) and (48), contrary to the passive sensation described in (45) an (46), the subject participant is consciously aware of the object participant. Therefore, following Langacker's observation above, I would say that the subject participant's mental path to the object participant encourages the concepturalizer, the speaker in G, to co-align his mental path with the subject participant's own mental path. If this is the case, then Fig. 11 (a), not (b), is the relevant description of the event observation for the sentences in (47) and (48). Recall that Fig. 11 (a) requires the use of the anaphor only, not the pronoun.

4.3 Double Object Constructions

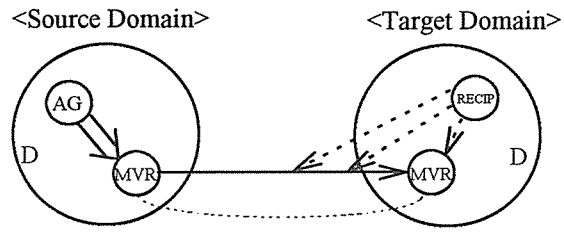
Larson (1988) points out the asymmetry between the two objects in the double object and oblique constructions.

(50) a. I showed Mary$_i$ herself$_i$.
b. *I showed herself$_i$ Mary$_i$.
(51) a. I presented Mary$_i$ to herself$_i$.
b. *I presented herself$_i$ to Mary$_i$. (Larson 1988: 336)

Before considering how our framework can capture the contrasts in (50) and (51), let us briefly review the CG account of the relevant constructions.

The generative tradition has assumed a derivational relationship between these two constructions[21]. However, CG, which does not assume the syntactic derivation, captures the similarities and differences between them by regarding them as highlighting different portions of the same cognitive structure. Consider Fig. 12, which diagrams the canonical act of transfer on which the conceptual structure of *give* is based.

[21] For example, Larson (1988) regards the double object as derived from the oblique construction, by an operation analogous to the passivization.



<Fig. 12> (After Langacker 1991: 332)

Fig. 12 shows that the agent (AG) makes a forceful contact with the mover (MVR) and it moves to the recipient's (RECIP) dominion. The recipient makes mental contact with the incoming mover, resulting in the possessive relation. The single arrow shows the path the mover traverses, and the dashed line shows that the two entities are identical.

The choice between the oblique and double object constructions reflects the choice of the object, which in CG is characterized as the second prominent participant of the clausal relation, with the salience next to the subject. In the oblique construction, the mover, rather than the recipient, is given the salience, and chosen as the object. Note that this construction highlights the object and the path it traverses; the *to*-phrase only schematically specifies the direction of the mover's path to the target domain.

On the other hand, the double object construction gives the salience to the recipient and the possessive relationship (mental contact) between the recipient and the mover. The recipient, therefore, is chosen as the primary landmark.

This account explains the following contrasts.

(52) a. I sent the walrus to Harvey.
b. I sent the walrus to America.
(53) a. I sent Harvey the walrus.
b. *I sent America the walrus. (Langacker 1991: 360)

As the double object construction highlights the possessive relationship, (53a) is acceptable because *Harvey* can possess the walrus, while (53b) is not acceptable since *America* cannot possess it. In the oblique construction, as in (52), the *to*-phrase only shows the path the object traverses. Since both Harvey and America can be the direction in which the path traverses, both (a) and (b) are acceptable.

Now let us turn back to the contrast shown in (50) and (51), repeated below as (54) and (55).

(54) a. I showed Mary$_i$ herself$_i$.
b. *I showed herself$_i$ Mary$_i$.
(55) a. I presented Mary$_i$ to herself$_i$.
b. *I presented herself$_i$ to Mary$_i$.

The reason why the (b) sentences above are not acceptable is fairly obvious. In the

double object construction (54), the highlighted possessive relationship requires the recipient's mental contact to the mover. In this case, this mental contact relation is a reflexive relation, and therefore, according to our Condition B, its endpoint participant must be an anaphor. (54b) is not allowed because the initiator, not the endpoint, is coded by an anaphor.

In the oblique construction (55), where the resultant possessive relation is not highlighted, the relevant relation between the mover and the recipient is the path the mover traverses that goes from the source domain to the target domain. (55b) is unacceptable because here the recipient, located upstream of this path, is coded by an anaphor.

4.4 Backward Anaphora

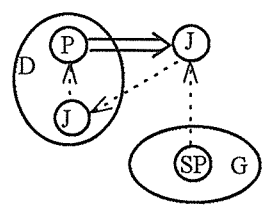
As we saw in section 1, the psychological verbs that takes a theme subject and an experiencer object are known to allow "backward binding". In (56a) the psychological verb, *bother*, is used, and the anaphor in the picture NP subject is allowed, while (56b), where *portray* is not a psychological verb, is not acceptable.

(56) a. Pictures of himself$_i$ bothered John$_i$.
b. *Pictures of himself$_i$ portrayed John$_i$ well.

Takami (1995) and Takagi (1995) argue that this phenomenon should be dealt with in the functional terms, and propose that in this construction the speaker's viewpoint is placed on the object experiencer participant rather than on the subject. Observe (57)[22].

(57) a. A picture of himself$_i$ in the magazine shocked the movie star$_i$.
b. ?A picture of himself$_i$ in the magazine shocked a movie star$_i$.
c. ??A picture of himself$_i$ in the magazine shocked someone$_i$.

(57) clearly shows the viewpoint effect, since the sentence goes more awkward as the referent of the anaphor goes more indefinite. If this construction reflects the speaker's viewpoint placed on the object, the event described in (56a) can be diagrammed as in Fig. 13.



J: John
P: Picture

<Fig. 13> *Pictures of himself bothered John.*

[22] I owe (57) to Ken-ich Takami.

Since the subject picture NP constitutes a reference point construction, the mental path that goes to it first reaches *John*. The speaker uses the object participant as a reference point, establishing a reflexive relation between the object *John* and another participant in the subject which also refers to *John*. Our Condition B then requires the latter to be coded by an anaphor.

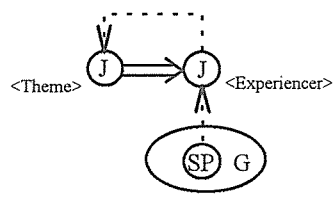
In our framework, we have hypothesized that the speaker's viewpoint is placed on the subject participant in a default case if (s)he takes the internal viewpoint option, and this has been supported by the CG assumption that the subject is the clausal figure, the most prominent in the clause, and is likely to be used as a reference point. Therefore, our claim that the speaker's viewpoint is placed on the object participant in the psychological verb construction requires justification.

Recall that in 4.2 we saw Langacker's proposal (49) that the conceptualizer's mental path follows the viewer's. In the situation described in the psychological verb construction, the experiencer is inevitably a viewer; otherwise (s)he cannot be psychologically affected. This viewing relation, according to (49), motivates our claim that the speaker uses the object as a clausal reference point. Although the energy flow (processual relation) is from the theme to the experiencer participants, the viewing relation goes in the inverse direction. This is what makes this construction behave peculiarly.

Following examples, where the anaphor participates in the verbal processual relation, further support our analysis.

(58) a. ?*John$_i$ pleases himself$_i$. (Dalrymple 1993: 170)
b. ?Politicians$_i$ depress/worry each other$_i$. (Grimshaw 1990: 158)
c. ?They$_i$ concern/perturb each other$_i$/themselves$_i$. (ibid.)

What is intriguing about the sentences in (58) is their ambiguous grammatical judgments. Consider Fig. 14 where (58a) is diagrammed.



<Fig. 14> *John pleases himself.*

In sentences in (58), the experiencer object is coded by an anaphor. There are two inversely directed relations between the two coreferential participants, one the verbal process and the other the mental contact. If the anaphor, the experiencer object, is interpreted in terms of the processual relation, our Condition A allows it, because this is a reflexive relation and its endpoint is coded by an anaphor. However, if we interpret it in terms of the mental contact relation, which goes from the experiencer to the theme subject, our condition B rejects the anaphor because it is the initiator, not the endpoint, of the relation. Thus the acceptability of the sentences in (58) depends

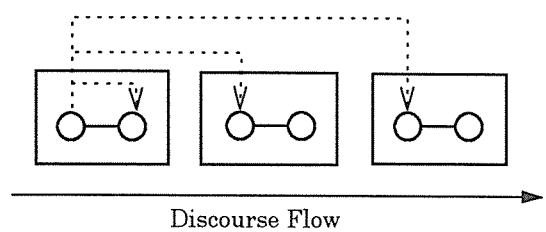
on which relation we interpret the anaphor[23], making the judgment rather ambiguous.

4.5 Extrasentential Antecedent

Let us consider the cases where the anaphor does not have its antecedent even in the same sentence.

(59) a. John$_i$ was furious.
The picture of himself$_i$ in the museum had been mutilated.
b. Mary$_i$ was extremely upset.
That picture of herself$_i$ on the front page of the *Times* would circulate all over the world. (Pollard and Sag 1992: 268)

As noted in van Hoek (1995: 325), the reference point model is essentially a discourse notion, and it works across sentences[24]. Thus, when a participant of a sentence is chosen by the speaker as a reference point, then it functions as a reference point as far as the dominion continues. This notion is shown in Fig. 15.



<Fig. 15> Reference Point in Discourse

In Fig. 15, the subject of the first sentence functions as a reference point for the two subsequent sentences. Given this analysis, isolated sentences we have looked at thus far are only the special cases of the discourse which happen to be composed of a single sentence.

This analysis enables us to account for the sentences in (59) in terms of our Condition A. In (59a), for example, if *John* serves a reference point for the second sentence, the speaker's mental contact reaches *John* first, and from there goes to the subject of the second sentence. The subject of the second sentence, a picture NP, itself constitutes a reference point construction, thus the mental path goes to its reference point, which is coreferential with *John*. Since this mental contact relation is a reflexive relation, our Condition A allows its endpoint participant to be coded by an

[23] One may wonder, however, why **Himself$_i$ surprised John$_i$* , where the theme subject is coded by an anaphor, is not acceptable at all, because there is a mental contact relation from the experiencer object to the theme subject, which could allow the subject to be coded by an anaphor. I would say that this sentence is unacceptable because, as we discussed in 4.1, English anaphors are accusative, not nominative.

[24] van Hoek (1995) captures the constraint on the extrasentential distribution of pronouns in the reference point model. See also Langacker (1991: 313-317) for how the reference point model deals with the notion of topic in the discourse.

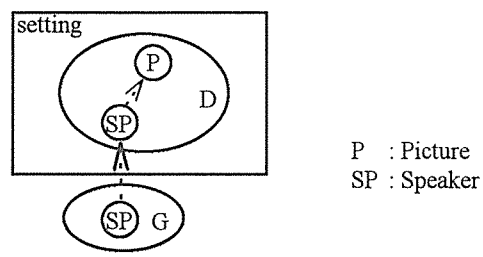
anaphor.

4.6 First and Second Person Reflexives

We have observed in 2.3 that the first and second person reflexives in the picture NPs do not necessarily need their antecedents, either in the same sentence or the preceding discourse.

(60) a. This picture of myself will make John happy.
b. This picture of yourself will make John happy. (Cantrall 1974: 22)

In our analysis, this fact is captured by the existence of the mental contact relation between the speech act participants in the ground, the speaker or the addressee, and the participants in the observed event[25]. The relevant portion of (60a), the subject picture NP, is shown in Fig. 16.



<Fig. 16> *This picture of myself...*

Since there is a reflexive relation of mental contact between the speaker in the ground and the on-stage participant, the reference point of the picture NP, the latter is allowed by our Condition A to be coded by a reflexive. The same explanation holds for the second person reflexive.

However, this approach erroneously predicts that the following examples, where the first and second person reflexives participate in the verbal processual relation, are acceptable.

(61) a. *John hit myself.
b. *John hit yourself.

(61a), for instance, is diagrammed in Fig. 17 in the external viewpoint option[26].

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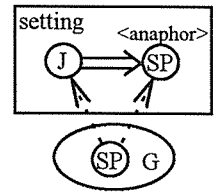
[25] One may wonder why the pronouns are also available for the construction like (60), as in *This picture of me will make John happy.* I would suggest that the speaker in the ground can either take the addressee's viewpoint, or observe the on-stage event directly. In the former case, the mental path relation between the speaker and the on-stage participant is not direct, therefore, the first person pronoun can be used.

[26] Note that if the internal viewpoint is taken, our Conditions correctly rule out the sentences in (61).



J: John
SP: Speaker

<Fig. 17> *John hit myself.*

In Fig. 17, there is a mental contact between the speaker and the endpoint participant of the verbal processual relation. Since this relation is reflexive, then our analysis would predict that the endpoint participant of this relation be coded by the first person reflexive, as in (61a). Intuitively, this is because the anaphor in this case is interpreted in terms of the verbal processual relation, rather than the mental contact relation between it and the speaker. But why this is the case requires justification.

To find out the reason why the sentences in (61) are not allowed, let us first consider our Conditions A and B, repeated here as (62) for reference.

(62) *Conditions on Anaphor Distribution*
A. If its endpoint is an anaphor, then the relation must be reflexive.
B. If a relation is reflexive, then its endpoint must be an anaphor.

The import of our Condition A is that the relation must be reflexive if its endpoint participant is an anaphor. However, in Fig. 17, there are two relations, one the verbal processual relation and the other the mental contact relation, in which the anaphor participates as their endpoint participant. Therefore, we need to determine in terms of which relation our Condition A requires the anaphor to be interpreted.

My claim is that our Condition A is sensitive to the transitivity of the relation. Basically following Kemmer (1993)[27], I assume that a processual, energetic relation, is higher in transitivity than the mental path relation, and is chosen for the interpretation of the anaphor. Let us call this the *Transitivity Constraint*.

(63) *The Transitivity Constraint*
If the anaphor is the endpoint of both processual and mental contact relation at the same time, then our Condition A applies to the processual relation, which is more transitive.

If this is correct, in the case diagrammed in Fig. 17, our Condition A applies to the processual relation, not to the mental contact relation. Since this processual relation is not reflexive, our Condition A does not allow the sentences in (61)[28].

In Japanese, the situation looks different. As noted by Akiyama (1995), Japanese

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[27] Kemmer (1993: 50) suggests that the prototypical two-participant event is defined by the transitivity, which is based on Hopper and Thompson (1980). According to her, "the prototypical two-participant event is defined as a verbal event in which a human entity (an Agent) acts volitionally, exerting physical force on an inanimate entity (a Patient) which is directly and completely affected by that event."

[28] In a sense, our Condition A is the interpretation rule, while Condition B is the production rule. In the case under discussion, the production rule requires the use of an anaphor, but the interpretation rule rejects it.

anaphor *zibun* can be interpreted as coreferential with the speaker, even when it is an argument of a verb, or a processual participant in our terms[29]. This interpretation needs some context, but makes a clear contrast with the English first person reflexive in (61) which can never be interpreted as coreferential with the speaker. Consider (64), where *zibun* can be coreferential either with the subject or with the speaker.

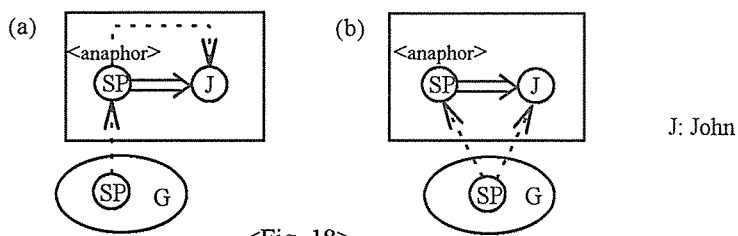
(64) a. Kare-ga zibun-o taihosita nodesu.
he-nom self-acc arrested
"He arrested me/himself."
b. John-ga zibun-o nagutta nodesu.
John-nom self-acc hit
"John hit me/himself."

This difference in the behavior of the first person anaphor in English and Japanese becomes explicable if we hypothesize that the Transitivity Constraint (63) does not apply to Japanese *zibun*. If this is correct, in the viewing arrangement shown in Fig. 17, *zibun* can then be interpreted either on the processual relation or on the mental contact, allowing the ambiguous anaphor *zibun* in (64). The applicability of the Transitivity Constraint will be discussed again in connection with long distance anaphora in 4.8.

Interestingly, the first person *zibun* can appear in the subject position too, which, in our terms, is the initiator of the processual relation[30].

(65) Zibun-ga John-o kososimahsita.
self-nom John-acc killed
"I killed John."

Notice that the acceptability of (65), where the first person anaphor is the subject, is predicted by our analysis. Consider Fig. 18 with two viewpoint options.



<Fig. 18>

Since in both viewpoints the anaphor is the endpoint participant of a reflexive

[29] Akiyama (1995) proposes that *zibun* in an argument position optionally reflexivizes the predicate, and the SELF-anaphor in English obligatorily reflexivizes the predicate. This claim is obviously correct, but he does not suggest what motivates this difference between two languages.

[30] The standard Japanese does not allow the second person *zibun* in the subject position. However, it should be pointed out that in the Kansai dialect, the second person *zibun* in the subject position is widely used.

relation, our Condition A allows it. The Transitivity Constraint is irrelevant here, because there is no other competing relation.

By the same token, however, our analysis seems to predict erroneously that English first and second person reflexives in the subject position are acceptable too. But this is not the case as in (66).

(66) a. *Myself hit John.
b. *Yourself hit John.

The reason that sentences in (66) are unacceptable is because of the English-specific reason that English reflexives are accusative, as we discussed in 4.1. Recall that the same reason ruled out the following sentence too.

(67) *Himself$_i$ hit John$_i$.

4.7 Speech Act Verbs

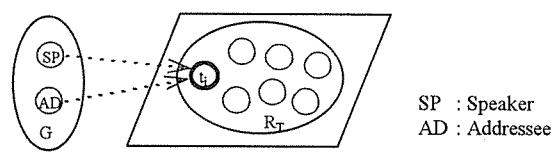
In 2.4.2, a problem was raised about the status of the *about*-phrase. As in (68), the anaphor in the *about*-phrase shows complementary distribution with the pronoun, a feature of the "grammatical" anaphor, in Reinhart and Reuland's (1993) sense.

(68) Mary talked to John$_i$ about himself$_i$/*him$_i$. [=(34)]

However, as Kuno (1987) reports, this anaphor clearly shows the viewpoint effect, a feature of "logophoric" anaphor, since it goes more awkward as the referent of the anaphor goes more indefinite.

(69) a. ?Mary talked to John$_i$ about himself$_i$.
b. ??Mary talked to a student$_i$ about himself$_i$.
c. *?Mary talked to someone$_i$ about himself$_i$. [=(32)]

Before tackling this problem, let us clarify how CG can handle the nature of the speech act verbs. The speaker and the addressee face the task of coordinating their mental references to the same entity[31], as diagrammed in Fig. 19.

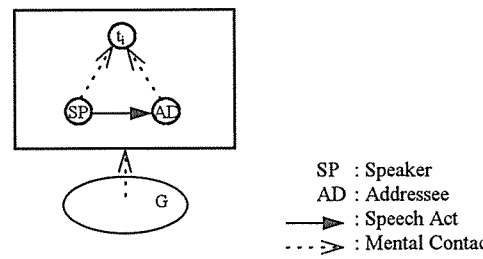


<Fig. 19> Successful Communication
(partially adopted from Langacker 1991: 92)

[31] See Langacker (1991: 89-95).

In Fig. 19, the speaker and the addressee in the ground successfully coordinate their mental reference to the same instance (t_i) among the set of instances (R_T).

The speech act verb sentences like *Mary talked to John about something*, then, is to profile the above mentioned act of communication which takes place in the on-stage region. Very schematically, this situation can be diagrammed as in Fig. 20.



<Fig. 20> Speech Act

Given the analysis above, let us turn to the sentence (68) in which only the anaphor, not the pronoun is allowed. In the event described in (68), SP is *Mary* and AD is *John*. The target of their mental contact t_i is referentially identical with *John*. Obviously, the relation between AD and t_i is a reflexive relation, and t_i is its endpoint participant. Therefore, our Condition A, which requires the relation whose endpoint is an anaphor to be a reflexive relation, allows the use of the anaphor in (68), and our Condition B, which requires the endpoint of an reflexive relation to be an anaphor, rules out the use of the pronoun.

The reason of the viewpoint effect seen in (69) is also obvious. Since the relation between AD and t_i is a mental contact which reflects AD's viewing, the more indefinite AD becomes, the more difficult it becomes for the conceptualizer in the ground to conceptualize AD's viewing, the usual viewpoint effect.

Let us next consider the contrast observed in the examples cited below.

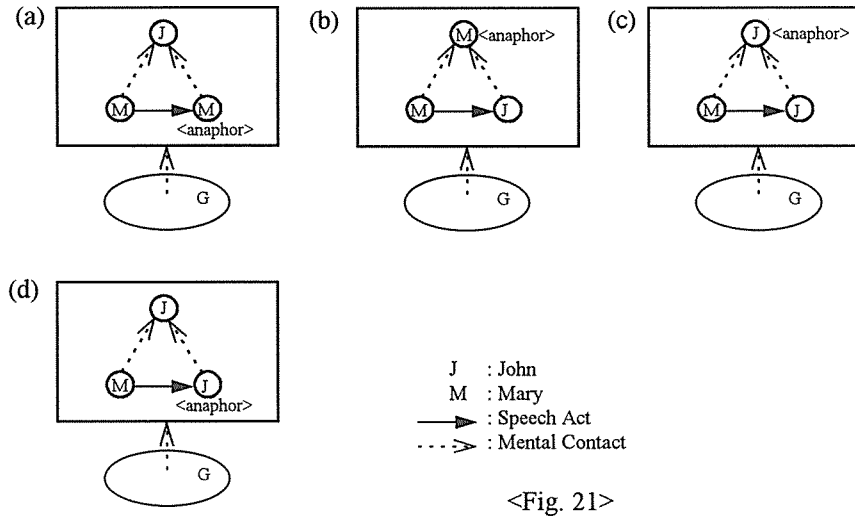
(70) a. Mary$_i$ talked to herself$_i$ about John.
b. Mary$_i$ talked to John about herself$_i$.
c. Mary talked to John$_i$ about himself$_i$.
d. *Mary talked about John$_i$ to himself$_i$.

Among the sentences above, why (70c) is acceptable and why (70d) is ruled out have been a serious problem from the syntactic point of view, because the antecedent does not c-command the anaphor in (70c), as it is in a PP, and even if the c-command is assumed to hold, (70d) is still to be accounted for[32].

I claim, however, that the sentences in (70) will be captured in our framework based on the above analysis for the speech act verbs.

The relevant events described in the sentences in (70) are diagrammed in Fig. 21.

[32] See, for example, Postal (1971), Chomsky (1981), Larson (1990) for the transformational or structural accounts, Wilkins (1988) for the thematic-role-based analysis, and Pollard and Sag (1992, 1994) for the HPSG approach, among others.



<Fig. 21>

The sentences in (70) correspond to (a)-(d) of Fig. 21. In Fig. 21 (a), (b), (c), the participant coded by an anaphor is the endpoint of a reflexive relation. Therefore, according to our Condition A and B, an anaphor, and only the anaphor, is allowed. However, in (d) of Fig. 21, the participant coded by an anaphor is the initiator, not the endpoint, of a reflexive relation. Of course, our Condition B does not allow it[33].

4.8 Long Distance Anaphora

Langacker (1991) suggests that the relationship between the off-stage ground and the observed event can be extended to the relationship between the main clause participants and the event described in the complement clause. He states,

> (71) The relationship between a main clause and a complement clause is analogous to the one between the ground and the grounded structure. The analogy is strongest when the subject (or another main-clause participant) functions as conceptualizer with respect to the contents of the subordinate clause. (Langacker 1991: 442)

In our framework, then, the event described by the complement clause can be diagrammed as a setting that is embedded in the setting for the main clause event.

In English, the long distance anaphora across the clause boundary is impossible.

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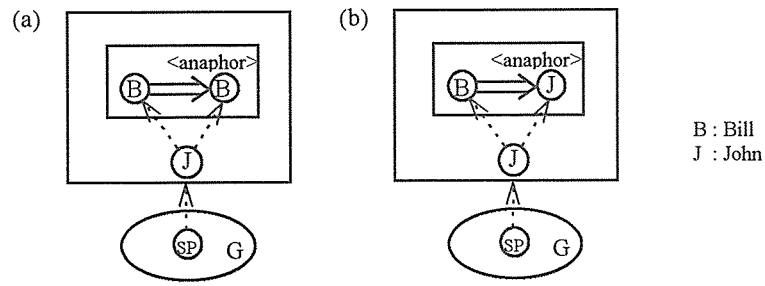
[33] One problem remains, however. The sentence **Mary talked about himself to John*, with *John* and *himself* coreferential, is unacceptable. Our framework would analyze the event described in this sentence as the same as Fig. 21 (c), and incorrectly predicts that it should be acceptable. I would only suggest that the effect of the linear order possibly comes into play here, in a sense that the *Mary* -->*John* mental contact appears before the *John* -->*John* mental contact in the sentence, and we tend to interpret the anaphor on the former.

(72) a. John thought that Bill$_i$ hit himself$_i$.
b. *John$_i$ thought that Bill hit himself$_i$.

Following Langacker's suggestion (71), the event shown by the sentences in (72) are diagrammed in the line of Fig. 22, where (a) and (b) correspond to the sentence (72a) and (72b) respectively.



<Fig. 22>

In Fig. 22, the main clause subject *John* observes the event described in the complement clause. John is taking the external viewpoint option[34]. Based on Fig. 22 (b), it seems that the sentence (72b) is predicted to be acceptable, since there is a mental contact reflexive relation *John* --->*John*. But our framework appropriately rules this out.

Recall the Transitivity Constraint (63) in 4.6, which states that when the anaphor is the endpoint participant of two different relations at the same time, then the more transitive one is chosen for the interpretation of our Condition A. In Fig. 22, the anaphor is the endpoint participant of two different relations, a verbal processual relation and the mental contact relation. Therefore, according to the Transitivity Constraint, the former is chosen for the interpretation of the anaphor. In Fig. 22 (a) this processual relation is a reflexive relation, hence (72a) is acceptable. On the other hand, since the processual relation is not reflexive in Fig. 22 (b), the sentence (72b) is ruled out.

In Japanese, however, *zibun* can be coreferent either with the complement clause subject or with the main clause subject, as shown in (73).

(73) John$_i$-ga Bill$_j$-ga zibun$_{i/j}$-o nagutta to omotta.
John-nom Bill-nom self-acc hit comp thought
'John thought that Bill hit himself.'

In 4.6, we hypothesized that the Transitivity Constraint (63) does not apply to the Japanese anaphor *zibun*, based on the observation in (64) that *zibun* in the main cluase object position can be coreferential with the speaker in the off-stage ground. The same line of argument also applies to (73). As shown in Fig. 22, *zibun* in (73) is

[34] The internal viewpoint is of course theoretically possible. But since it would represent the situation that only allows the acceptable (72a), I omitted it here.

the endpoint participant of both processual and mental contact relations. Since the Transitivity Constraint does not apply in Japanese, it can be interpreted on either relations. If the processual relation is chosen, it goes with the complement clause subject, and if the mental contact is chosen, then it is interpreted as coreferential with the main clause subject.

The fact that the long distance anaphora is impossible in English and possible in Japanese has been explained by their difference in applicability of the Transitive Constraint. Recall that the same factor also explained in 4.6 the fact that the first and second person reflexive in the main clause object position is impossible in English to be coreferential with the speaker or the addressee in the off-stage ground, and possible in Japanese (cf. (61) and (64)). This supports Langacker's suggestion that the relationship between a main clause and a complement clause is parallel to the one between the off-stage ground and the observed event; both are the viewing relationship and therefore the applicability of the Transitivity Constraint is consistent, in the sense that the Transitivity Constraint applies both to the relationship between the speaker in the ground and the main clause, and to the one between the main clause and the complement clause.

It has been pointed out in the literature that transitivity plays a greater role in English than in Japanese[35]. If the foregoing argument is correct, this typological characterization is supported by our observation that in English, but not in Japanese, the anaphor prefers the processual relation to the less transitive mental contact for their interpretation.

5 Conclusion

In this paper, we have seen that a Cognitive Grammar approach can deal with the distribution of the anaphor without recourse to the distinction between "grammatical" and "logophoric" anaphors. With a cognitively motivated assumption that the participant coded by an anaphor is the endpoint of a reflexive relation, we can capture the distribution of anaphors, either "grammatical" or "logophoric" on the same ground. Our conclusion is that this distinction is in fact arbitrary, and that their distributional differences are the result of the different kinds of relation, process and mental contact, to which the same function of the anaphor is applied. Also, some differences between English reflexives and Japanese *zibun* are claimed to be motivated by the applicability of the Transitivity Constraint. This suggests that the transitivity plays a greater role in English than in Japanese, as claimed by many researchers.

We cannot conclude this paper without mentioning a Cognitive Grammar theory of pronominal anaphora presented by van Hoek (1992). Her claim is that the anaphoric pronouns are in fact located in the dominion in which its antecedent serves the reference point, and therefore, pronouns are anomalous if this reference point structure is not realized. Her theory is based on the accessibility theory outlined by

[35] See Ikegami (1981), for example, in which it is demonstrated that the transitivity plays a greater role in English than in Japanese.

Ariel (1988). Her natural assumption that the pronoun expresses cognitively more accessible concept than the full NP motivates van Hoek's theory.

Following her view, we could characterize the anaphor as coding the most accessible concept in that its antecedent lies in the single relation. However, the actual distribution of anaphors is too complicated, as we have seen so far, to be accounted for by just saying it codes the most accessible concept. I hope the present paper contributes to the wider applicability of the Cognitive Grammar treatment of the distribution of anaphors through the close examination of the mental contact relation involved in anaphors as well as their basic semantic function.

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