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INVERSION AND
SUBJECT DECISION IN ENGLISH*

1 INTRODUCTION

This paper deals with subject-verb inversion in English, which is exemplified in (1). This construction has a preverbal locative or attributive phrase and a postverbal so-called logical subject.[1]

(1) a. To the left of the altar one of the big wall panels with rounded tops opens, it is a secret door like in a horror movie, and *out of it steps Archie Campbell* in a black cassock and white surplice and stole.

(Updike, *Rabbit is Rich*, italics mine)

   b. (Stewardess on Midway airlines, 12/30/83)
       We have complimentary soft drinks, coffee, Sanka, tea, and milk. *Also complimentary is red and white wine.* We have cocktails available for $2.00.   (Birner 1992)

A lot of linguists, especially syntacticians, have been interested in the unusual word order of this construction, and proposed some syntactic, semantic, pragmatic constraints on it (Penhallurick 1984, Coopmans 1989, Rochemont and Culicover 1990, Birner 1992, 1994, 1995, Bresnan 1994, Levin and Rappaport Hovav 1995, Collins 1997, and many others). None of them, however, can sufficiently account for the mysterious properties of this construction. In particular, the partial subject behavior of the preverbal and postverbal constituents is left unexplained.

The goal of this paper is to show why such an unusual word order is allowed in English and why two constituents in inversion exhibit some subject behavior. I will argue that an analysis from a cognitive perspective enables us to solve these problems.

The analysis I will present here is based on Langacker's (1987, 1991a)

[1] There are some constructions having a postverbal logical subject and preverbal element other than subject. In this paper, however, I ignore quotative inversion because there is no significant difference between it and its canonical counterpart. I also ignore *there*-construction because it differs from inversion in various ways. See examples (18) and (19) in this paper. See also Birner and Ward (1993), Ward and Birner (1995, 1996).

COGNITIVE GRAMMAR. The figure/ground alignment and the reference-point construction, which are supposed to be parts of basic human cognition, have much to do with subject decision and word order arrangement in many languages. These two central factors effectively account for language variations. They restrict the range of elements which may be selected as subjects, and reveal what kind of factor each language regards as important in deciding them. I will show that English is very sensitive to the energy flow transmitted from agent to patient, and that the loss of asymmetrical energy flow sometimes bares inverted sentences.

In section 2, I will observe some unusual aspects of English inversion, and briefly criticize some previous syntactic, semantic, and pragmatic analyses of this construction. Section 3 introduces cognitive methods such as figure/ground alignment and reference-point construction, which play a great role in subject decision in English — and perhaps in many other languages, too. In section 4, I will propose a cognitive analysis of English inversion, related to characteristic English subject decision. Section 5, based on the analysis in the previous section, accounts for some properties of this construction. Finally, I will summarize the argument in this paper in section 6.

2   CHARACTERISTICS OF INVERSION AND PREVIOUS STUDIES

In this section I will show the problems I will try to solve in this paper, and then I will survey some previous analyses of this construction. I will argue that none of them sufficiently accounts for the strange behavior of inversion.

2.1 Characteristics of Inversion

2.1.1 Semantics of the Preverbal Constituent   The word order of English inversion looks queer because a constituent like a subject appears in the postverbal position, which is not one for subject. Moreover, some other constituent, which canonically goes after the verb, occupies the preverbal position.

We have to clarify the phrase types that can occupy the subject position. Birner (1992) classified inversions into 5 types according to the syntactic categories of the preverbal constituent: PP inversion, VP inversion, AdjP inversion, NP inversion, and AdvP inversion. Examples are given below.

(2) a.   He was making tea and warming his deeply lined, cracked hands on the pot — *under his ragged nails was the mechanic's permanent, oil-black grime.*   (Irving, *The Cider House Rules*, italics mine)

   b.   VISITING BOULDER ABBEY: Mother Teresa pays a Saturday afternoon visit to St. Walburga's, an abbey east of Boulder. *With the Nobel Prize winner are Archbishop Francis Stattford, Mother Mary Thomas Beil and the Very Rey, Marcian O'Meare*, who is vicar for religious affairs for the Denver archdiocese.   (Birner 1992)

(3) a.   He could see nothing on it until his gaze extended to a wide circular

patch recently drenched by one of the sprinklers, and *crossing that patch went the man's foot-marks and the woman's shoe imprints.*

(Upfield, *No footprints in the Bush*, italics mine)

b.   Criticized often for drunkenness is John Smith.   (Birner 1992)

(4) a.   Just last week, Kohl and Mitterand announced that their countries planned to develop a helicopter.
More important has been France's strong and vocal support for NATO's decision to deploy the new missiles and its condemnation of Western European pacificism.   (ib.)

b.   In cities like New York, the threat of further spread has led to aggressive responses. Beginning in September 1990, New York City will test all students entering the public school system for tuberculosis.
Especially worrisome to public health experts is the growing number of cases caused by tuberculosis germ strains that have become resistant to drugs commonly used to treat the disease; five of the nine clusters reported to the Centers for Disease Control so far this year involved such organisms.   (ib.)

(5) a.   The concepts of reference and denotation have to do with word-meaning. *Other concepts important to word-meaning are synonymy, homonymy, and antonymy.*   (ib.)

b.   *Another major trend of 1980s was the sudden ubiquitousness of the personal computer*, a tool that has freed millions of people to use words such as "ubiquitousness" without actually knowing how to spell them.

(ib.)

(6) a.   Upali was going to turn 45 in two days. A gala party was planned at his palatial mansion, with his cousin, the nation's president, among the guests. Upali never made it. { . . . }
Thus was born one of the southern Asia's best real-life mysteries.   (ib.)

b.   Postiglione, 43, a landlord, got a year in jail and $15,000 in fines after pleading guilty to coercion and conspiracy in forcing low-income residents out of his 54-room building on W. 85th St. so that expensive property could be built on the property.
So ended one of the more sordid episodes in a long-running housing war that has engulfed NY neighborhoods from the sedate brownstones of the Upper West Side to seedy streets in Brooklyn.   (ib.)

Among 1778 examples Birner collected, 1286 examples are PP inversions, 282 are VP inversions, 112 are AdjP inversions, 16 are AdvP inversions, and 48 are others, including complex preverbal constituents. We notice that in most PP inversions and some VP inversions the preverbal constituents are semantically locative. This means that about 75 per cent of English inversion sentences belong to "locative inversion." Among the other 25 per cent, most of them have preverbal constituents expressing an attribute of the postverbal constituents. For example, in (4a), *more important* is an attribute of *France's strong and vocal support*. I call this type "attributive inversion."

In accounting for the inverted word order, it is necessary to show why those two types of the preverbal constituents are in the majority. In section 5, I will argue that an

analysis from a cognitive point of view naturally accounts for this, and I will show that it also accounts for the predominance of locative inversion over attributive inversion.

2.1.2. On the Subject Behavior of Two Constituents   Bresnan (1994) and Nakajima (1996) observe that both preverbal and postverbal constituents in English inversion exhibit some grammatical behavior that is said to be particular to subjects. First, Bresnan argues that the preverbal constituent is considered to be the subject when we ask a tag question, but that the postverbal one does not act as subject.

(7) a. In the garden is a beautiful statue, isn't there?   (Bresnan 1994)
    b. *In the garden is a beautiful statue, isn't it?
(8) a. %Running for V. P. along with Dole was Kemp, wasn't it?[2]
    b. *Running for V. P. along with Dole was Kemp, wasn't he?
                                                      (Michael T. Wescoat p.c.)

Note that the description above doesn't hold when the postverbal constituent is marked by a definite article.

(9) a. *On the sofa is sleeping the cat, isn't there?
    b. ??On the sofa is sleeping the cat, isn't it?   (ib.)

Second, the preverbal constituent undergoes a so-called subject raising. The preverbal constituent cannot be raised in the same situation.

(10) a. Over my windowsill seems ____ to have crawled an entire army of
         ants.[3]   (Bresnan 1994)
     b. *An entire army of ants seems over my windowsill to have
         crawled ____.
(11) a. A far more good doctor seems ____ to be John Smith.
     b. *John Smith seems a far more good doctor to be ____.

The third test is so-called *that*-trace effect: a sentence with a complementizer *that* followed by the trace of an embedded subject is not allowed. The movement of a preverbal phrase which gives rise to a *that*-trace effect is not allowed.

(12) a. *It's in these villages that we all believe that ____ can be found the
         best examples of this cuisine.
     b. It's in these villages that we all believe ____ can be found the best
         examples of this cuisine.   (Bresnan 1994)

Next, an extraction from a subject is said to be impossible. This phenomenon is called an island constraint: a subject forms an island against extraction. Both the preverbal and postverbal constituents fulfill this condition, for no extraction out of

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[2] The mark % means that people diverge in their acceptability judgements.
[3] An underlined space represents the position from which a raised element is considered to have moved.

them is allowed.

> (13) a. *Which forest were [in ____] found a lot of wolves.[4]
> b. *What were in this forest found [a lot of ____]?

According to the tests I made above, the preverbal constituent seems to be eligible for a subject. I, however, have some tests, which indicate that the postverbal constituent, not the preverbal one, is a subject. For example, the postverbal constituent takes part in the agreement with the verb, whereas the preverbal one has nothing to do with the subject-verb agreement.

> (14) a. Under the water lie a number of wrecked ships.
> b. Under the mountains lies a large amount of gold.
> (15) a. More serious were the injuries to his head.   (Penhallurick 1984)
> b. More serious was the injury to his head.

Another test indicating the subjecthood of the postverbal constituent has to do with what is called PRO control. In a participial construction, the invisible subject of the participial phrase is regarded as the same person as the subject of the main clause. The postverbal constituent can be regarded to be subject of a participle, but it is impossible for any other constituents in inversion to be so.

> (16) a. *On the hood of the Mercedes was sleeping a cat, sitting another cat.[5]
> b. *On the hood of the Mercedes was sleeping a cat, shining under the sun.
> c. On the hood of the Mercedes was sleeping a cat, snoring contentedly.

The unacceptability of (16a) and (16b) indicates that neither *on the hood of the Mercedes* nor *the hood of the Mercedes* can control the PRO of a participial clause. Only *a cat* can control PRO, so it can be regarded to be subject of the main clause.

In summary, the preverbal constituent behaves as a subject in that (i) it is regarded as the subject in composing a tag question, (ii) it undergoes a subject raising, (iii) it causes a *that*-trace effect, (iv) it forms an island against extraction. The postverbal constituent behaves as a subject in that (i) it forms an island against extraction, (ii) it takes part in the agreement with the verb, (iii) in a participial construction it is understood as subject of the participial phrase. The grammatical behavior of the two constituents I observed above show that both the preverbal and postverbal constituents have some subject properties, but neither of them has all subject properties. No theory based on traditional necessary and sufficient conditions can account for these phenomena, since no element in this construction has enough

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[4] A set of brackets stands for a so-called "island." No extraction out of it is allowed.

[5] The example (16a) is formed by two clauses *on the hood of the Mercedes was sleeping a cat* and *on the hood of the Mercedes was sitting another cat*, where the preverbal constituent in the latter is omitted. Similarly, the example (16b) is made by omitting *the hood of the Mercedes* in the participial clause. The unacceptability of (16a) and (16b) indicates that the omitted elements cannot be regarded as the subject of these sentences.

properties to be qualified as subject. If one insists on the traditional decision of subject, he or she must give up either the property of subject position or the property of subject-verb agreement, otherwise he or she will fall between two stools.

Note that the preverbal and postverbal constituents show a complementary distribution on the phenomena I observed above, except island constraint. In section 5, I will argue that an account based on Prototype Theory solves the mystery of these phenomena with split subject properties.

2.2 Some Previous Analyses

2.2.1 Syntactic Accounts   Some syntacticians have analyzed the inverted word order and the behavior of the preverbal and postverbal constituents. Most of them, especially Minimalists, assert that the syntactic component in our brain is autonomous: i.e. the sentence generating system is not affected by any semantic and pragmatic factors.

Coopmans (1989) argues that in English locative inversion a null subject occupies the specifier position of INFL and that an expletive *there* is sometimes inserted into this position. The preverbal constituent moves from a VP internal position and goes into COMP, and the postverbal constituent goes to a focus position.

(17) $[_{COMP} PP_j] [_S$ e INFL $[_{VP} [_{VP} V$ t_i $t_j] NP_i]]$ (Coopmans 1989)

There are problems with this analysis. First, it cannot account for the subject behavior of the two elements because neither of them moves via the specifier position of INFL. Although a covert movement may account for the agreement phenomenon, the element in COMP will not acquire grammatical subject behavior. Second, the null subject analysis is suspicious because English is a language which does not admit a null subject. This construction violates the Extended Projection Principle, which requires an overt subject for every English sentence. Thirdly, *there*-insertion and *there*-deletion often change the acceptability of the sentence. Consider (18) and (19).

(18) a.   I filmed David, age twelve, plucking lint off his underwear.... David's undershirt, like several of its predecessors, is about to fall apart. He has, in a sense, picked it "clean."
Under David's bed is his entire lint collection, the result of three years of thread-pulling.

   b. ??*Under David's bed there is his entire lint collection, the result of three years of thread-pulling.*   (Birner 1992)

(19) a.   But at the centre of his own faith there always stood the convincing mystery —— that we were made in God's image.

   b. ??But at the centre of his own faith always stood the convincing mystery —— that we were made in God's image.   (ib.)

An analysis with *there*-insertion cannot account for the change of grammaticality of these sentences.

Bresnan proposes an analysis with Lexical Functional Grammar. Her basic strategy is to prepare three kinds of subjects, which are not necessarily integrated into a single element. In her words, 'in English locative inversions there is no structural subject, the logical subject is a focussed object that appears in immediately postverbal object position, and the functional subject is an oblique PP argument that does not show any morphological or phrase-structural subject properties.' This theory with three subjects enables her to account for the subject behavior of plural constituents. (20) shows her analysis.

(20)   a-structure: < theme   locative >

f-structure: TOPIC ———⟶ ['into the room']
              SUBJECT
              TENSE   past
              PREDICATE   'walk'
   OBJECT
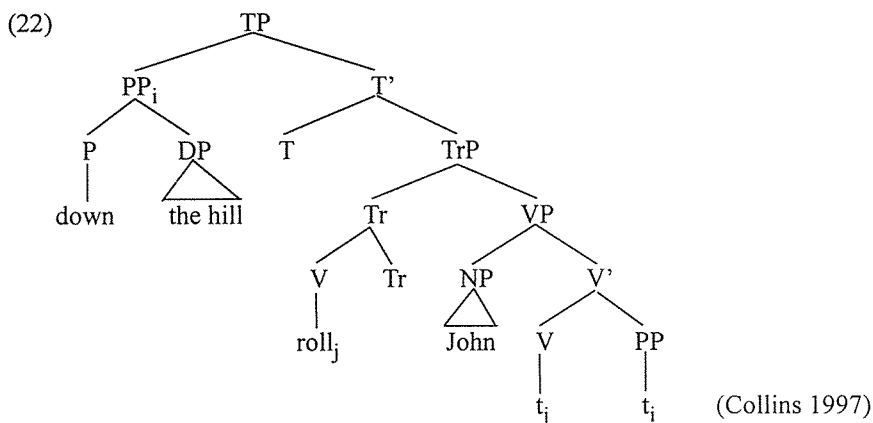   FOCUS ———⟶ ['John']

c-structure:
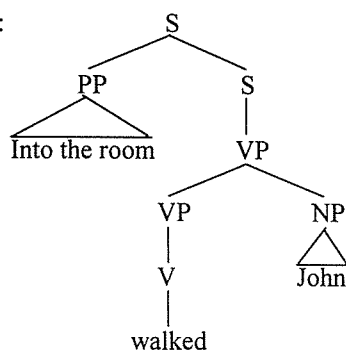
(Bresnan 1994)

I, however, point out two difficulties with her account. First, as we see in her description above, the c-structure she presents contains no subject. Another difficulty lies in the object function of the postverbal constituent in f-structure. If it functioned as an object, it would not take part in the agreement with the verb and the control of PRO. Her analysis with subjects in multiple levels may allow plural elements to have subject properties, but it requires some revision.

From Minimalist Program, Nakajima (1996) suggests an analysis with multiple specifiers. According to him, both the preverbal and postverbal elements are specifiers of INFL, i.e. subjects of the sentence. In structure (21), α is the preverbal constituent, and β is the postverbal one. β, which must be in a postverbal position, is situated there after LF in order to satisfy the requirement for information arrangement.

(21)   TP
          ╱   ╲
        α   T'
              ╱   ╲
            β   T'
                    ╱   ╲
                  T   VP   (Nakajima 1996)
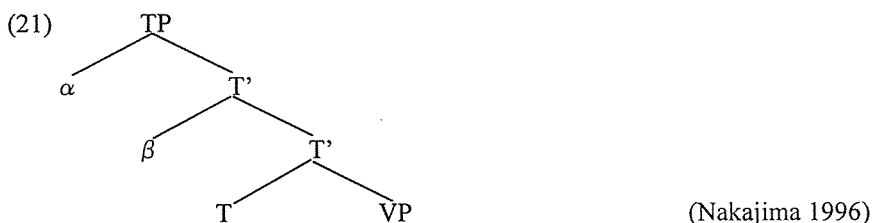
This analysis is, however, problematic. First, the reason for the movement of the preverbal constituent is, he suggests, to check out a P-feature of the verb, which represents semantic information about location. According to Chomsky (1995), an interpretable feature, which is necessary for LF to interpret the semantic aspect of the sentence, cannot trigger a movement. Moreover, if a P-feature were the cause of inverted word order, English inversion would be restricted to locative inversion and no attributive inversion would be allowed. Second, the movement of the postverbal constituent after a LF would have no effect on the word order since it is a covert movement after Spell-Out. If the movement occurred before Spell-Out, it would be reflected in the word order, but it would be a movement caused by a pragmatic requirement and inconsistent with the idea of the Minimalism. Another problem is empirical. This theory incorrectly predicts the full subject behavior of the two constituents because both of them are in the subject position.

Collins (1997) is another account based on the Minimalist Program. He proposes that the preverbal constituent syntactically occupies the subject position and that the postverbal constituent covertly takes part in subject-verb agreement.

(22)   TP
                   ╱   ╲
                PP$_i$ T'
             ╱   ╲   ╱   ╲
           P   DP   T   TrP
           │   ╱╲   ╱   ╲
         down   the hill   Tr   VP
                                   ╱   ╲   ╱   ╲
                                 V   Tr   NP   V'
                                 │   ╱╲   ╱   ╲
                               roll$_j$ John   V   PP
                                                          │   │
                                                          t$_j$ t$_i$ (Collins 1997)

This analysis appears to account for the grammatical behavior of the two constituents. A normal subject checks three features, i.e. an EPP feature, a nominative case feature, and a ϕ-feature. In an inverted sentence, however, the preverbal constituent checks an EPP feature, which qualifies it to undergo a subject raising, to cause a *that*-trace effect, and to form a subject island. The postverbal constituent checks a nominative case feature and a ϕ-feature, which meet the Case Filter and cause a subject-verb agreement.

I have some questions about this account. First, let us consider a sentence in which an NP in a PP is attracted by an EPP feature and pied-pipes the preposition in front of it. Why can't the NP take part in the subject-verb agreement? One solution is to declare that a ϕ -feature must be checked with an element that simultaneously checks a nominative case, but it is nothing more than a stipulation. Next, one may also question whether the postverbal constituent is really in the nominative case. Bresnan (1994), with the following example, argues that it is an accusative case.

(23)   Among the guests of honor was sitting HER [pointing].[6]

(Bresnan 1994)

Not everybody agrees with her judgement above, but Lambrecht (1994) presents another interesting example. He asserts that sentence (24) is available when a speaker discovers himself in a group photograph.

(24)   Look, here's ME!   (Lambrecht 1994)

These sentences may give rise to some questions on Collins' account. Can we admit a sentence that has no element with a nominative case? If he allows a discordance of the abstract CASE and surface form, in what situation may it be allowed? Can we guarantee a subject-verb agreement between *me* and *-'s*?

Generative Grammar asserts the autonomy of syntax: semantic and pragmatic factors should not have any effect on the word order. But in fact, as some linguists have found, the acceptability of inversion is sensitive to the interpretation of the verb and the informational status of the preverbal and postverbal constituents. No syntactic account explains this fact sufficiently.

2.2.2 Informational Arrangement   Most of the linguists who examined the informational aspect of inversion, e.g. Green (1980, 1985), Rochemont and Culicover (1990), Bresnan (1994), argue that this construction has a presentational function. In fact, the postverbal constituent in inversion seems to have a focus status: it conveys the most important information in the sentence. Penhallurick (1984) and Levine (1989) argue that not the postverbal but the preverbal constituent is in the focus, but their definition of "focus" is not "an element conveying the most important information" but "an element that attracts our attention," so these analyses are in fact something very similar.

Birner (1992) is opposed to these analyses based on the examples in (25). She argues that the postverbal constituent in English inversion does not necessarily carry new information. As she points out, the postverbal constituents in these examples have already appeared in the preceding contexts.

(25) a.   McPherson proffered the cigar and a fat hand reached forward and accepted it. The round face was expanded in a grin of anticipated pleasure, and *into the wide mouth went half the cigar*, to be

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[6] A word written in capital letters is pronounced with a special stress, which represents the informational significance of the word.

masticated by strong but tobacco-stained teeth.

<div align="right">(Upfield, No Footprints in the Bush, italics mine)</div>

b. Shiny and red, the apples hung over their heads. One squirrel stood on his hind legs. He stretched up until he was as thin as a weasel, but still the biggest apple hung out of his reach. Another squirrel leaped to the branch above it. He knew a better way than stretching! His sharp teeth gnawed the string that held it. *Down plopped the apple on the first squirrel's head.*   (Birner 1992)

Birner argues that English inversion is sensitive to discourse-familiarity.[7] She asserts that inversion has an information-packaging function: the preverbal constituent is more discourse-familiar than the postverbal one. Among the examples she cited, 78 per cent apparently include preverbal discourse-old and postverbal discourse-new elements. Examples are below.

(26) a. To the left of the altar one of the big wall panels with rounded tops opens, it is a secret door like in a horror movie, and *out of it steps Archie Campbell* in a black cassock and white surplice and stole.

b. (Stewardess on Midway airlines, 12/30/83)
We have complementary soft drinks, coffee, Sanka, tea, and milk. *Also complementary is red and white wine.* We have cocktails available for $2.00.   = (1)

In (26a), *it* in the preverbal constituent refers to the *secret door* in the preceding context, but *Archie Campbell* is a person who appears for the first time. Similarly, in (26b) there is something *complimentary* in the preceding discourse, but *red and white wine* has not appeared at the time of the utterance. She also points out that elements that are not present in the discourse but inferable from the preceding context can be regarded as discourse-old. Consider these examples below.

(27) a. Labor savings are achieved because the crew is put to better use than cleaning belts manually; *Also eliminated is the expense of buying costly chemicals.*   (Birner 1992)

b. Nusseibeh's unusual predicament causes concern all around. His friends fear that Arab hard-liners will turn on Nusseibeh, thinking he is an Israeli ally.
The Israelis, who certainly want to squelch the 17-month-old uprising in the West Bank and Gaza Strip, are under intense pressure from the United States not to jail moderates who may figure in their election proposal for the territories occupied since the 1967 war.
Most immediately affected is Nusseibeh himself.   (ib.)

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[7] Prince (1992) suggests two axes of information status: the hearer and the discourse. Hearer-familiarity has to do with long-term memory: i.e. it depends on whether the hearer knows the information or not. Discourse-familiarity has to do with short-term memory: i.e. it depends on whether it appeared in the preceding discourse or not.

In (27a), *eliminated* is almost the same as *savings* in the preceding context, whereas *the expense of buying costly chemicals* is brand-new information. In (27b), although *Nusseibeh* has already appeared in the discourse, we can infer from the context just before the utterance that somebody is affected. Because the inferential clue was later than the comment on *Nusseibeh*, the preverbal constituent is more discourse-familiar than the postverbal one.

Note that (25b) is also a counter example to Birner's account. The preverbal directional phrase *down* cannot be analyzed as more discourse-familiar than the postverbal *the apple*.

There are exceptions to both presentational function and discourse-familiarity, but it is obvious that English inversion arranges the information in a particular way. As I will argue in section 5, this is an important motivation for inverting word order.

2.2.3 Semantics of the verb   English inversion had been said to occur with verbs of a particular class, i.e. unaccusative verbs, but some recent observations assert that the verb usage in inversion depends on interpretation.

Levine (1989) and Bresnan (1994), analyzing locative inversion, argue that the preverbal constituent of inversion must be an argument of the verb.

(28) a.   On the corner was sitting a woman.
　　 b.   *On the corner was drinking a woman.　　　　　(Bresnan 1994)
(29) a.   Into the hole jumped a rabbit.
　　 b.   *Into the hole excreted the rabbit.　　　　　　　　　(ib.)

The preverbal constituents in (28a) and (29a) are arguments of the verbs, but those in (28b) and (29b) are adjuncts. This is in fact a restriction on the verb. The verb must represent a manner of existence or a change of location of the postverbal constituent. This constraint is what we call the Unaccusative Hypothesis.

Levin and Rappaport Hovav argue that the verb in English inversion is not restricted to unaccusative verbs. They show that all kinds of verbs can occur in English locative inversion as long as they are interpreted as verbs of existence or appearance.[8] The most suggestive examples include verbs representing typical manners of existence of the postverbal constituents. Consider the examples below.

(30) a.   *In Massachusetts grows corn very slowly.
　　 b.   In our garden grew a very hardy and pest-resistant variety of corn.
　　　　　　　　　　　　　　　　　　　　(Levin and Rappaport Hovav 1995)
(31) a.   *From the roof waved a bearded student.
　　 b.   From the flagpole waved a tattered banner.　　　　　　　(ib.)

(30a) and (31a) are unacceptable because the verbs in them are unergative verbs representing actions of the postverbal constituents. (30b) and (31b) include the same verbs, but they describe typical manners of existence of *corn* and *a banner*, so they

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[8] Kawakami (1984) presents an example of inversion with *go*, which may be a counter example to this generalization.

(i)　Away went the dog, and soon it came back again, bringing a box of money in its mouth.

are interpreted as verbs of existence or appearance.

On the verb in inversion, Birner makes an interesting analysis from a pragmatic point of view. She argues that the verb must be informationally light: i.e. it must be inferable from the elements around it. In her analysis, the verbs in (28a) and (29a) are inferable from the preverbal constituents, and the verbs in (30b) and (31b) are inferable from the postverbal constituents. Moreover, she presents a few examples in which the preceding context makes inversion acceptable. Consider the examples below.

(32) a.   *On the streets of Chicago melted a lot of snow.
     b.   The hot August sun beat down on the children as they walked down
          the street. Johnny was spooning up soggy sherbet out of a cardboard
          cup; *in Maria's sticky hand melted a chocolate-chip ice cream cone.*
                                                                    (Birner 1995)

She argues that the melting of an ice cream cone can be inferred from *the hot August sun beat* and that the light information of the verb makes this inversion acceptable. Note that Levin and Rappaport Hovav's theory is also able to explain this example. The verb expresses a typical manner of existence of an ice cream cone in such a situation, so the verb is interpreted as a verb of existence.

Note that Birner, taking attributive inversion into account, also argues that the copula *be* can occur in inversion because it is inherently informationally light. In section 5 I will suggest an analysis, which enables us to deal with verbs of existence, verbs of appearance, and the copula *be* at one stroke.

The problem of the semantic and pragmatic restriction on the verb is that it is nothing more than a stipulation and nobody can explain why we have such a restriction. I will show that a cognitive perspective explains the reason.

3   SUBJECT DECISION IN COGNITIVE GRAMMAR

What is "the subject of a sentence"? — This is one of the most important questions linguists have tried to solve. Traditional analyses of grammar establish subjects at multiple levels. One is the grammatical subject, and the other is the logical one.

Why do we have to prepare two kinds of subjects? In particular, why do we have to establish a logical subject? It is partly because we adopt a semantic theory based on objectivism. The problem is that grammatical structure sometimes deviates from what we expect from objective semantics. I doubt that the structure of language is fully based on objective semantics. Rather, I believe that it is based on human cognition and depends on the way we observe and construe the reality.

Another reason for providing two kinds of subjects is our adoption of a theory of categorization based on traditional necessary and sufficient conditions. It requires a clear-cut definition, which prevents us from capturing the semantic contribution to subject decision. Instead of this type of categorization, I follow Prototype Theory. I will show that this approach enables us to relate what we call a logical subject to a grammatical subject.

3.1 Prototype Theory

Cognitive grammar is based on the achievements of cognitive psychology. One of the most important concepts is the structure of knowledge called "gestalt." A gestalt is holistic: the whole is not reducible to the parts. At the same time it has an internal structure which is analyzable from several perspectives. For example, we can analyze a cat with respect to the properties of each part and relationships between the parts, but we recognize it as a cat as a whole. Once it is understood as a cat, it is a member of the category "cat," however peripheral it is. If I say *I painted a cat*, it will be one of the most peripheral members of the category though it is not a "real" cat.

A categorization based on gestalts requires a Prototype Theoretical approach based on "typicality conditions" and "family resemblance." According to this theory, members of a category are not decided by necessary and sufficient conditions. The more typicality conditions a member meets, the more prototypical in the category it is. The typicality conditions are not necessarily shared by all the members. An individual can be counted as a member of the category by family resemblance if it fulfills some typicality conditions. These conditions, moreover, can be shared by something that does not belong to the category. An individual is not necessarily counted as a member if it fulfills few typicality conditions.

Prototype Theory enables us to understand a lot of strange categorization phenomena, which the traditional theory of categorization based on necessary and sufficient conditions failed to explain. Consider the category "bird." There is no necessary and sufficient property that all the members of the category share, e.g. penguins don't fly, but beetles do. Conditions such as "having the ability to fly," "having feathers," "laying eggs," are not necessary and sufficient conditions but typicality conditions. A theory based on typicality conditions can correctly count a penguin as a member of "bird" for having some important prototypical properties of birds, and correctly exclude a beetle from "bird" for having few characteristic properties of birds.

This theory is also applied to grammatical categories, e.g. "subject." "The subject of a sentence" is the element that has the highest subjecthood in the sentence. The degree of subjecthood is decided according to the subject properties an element has. Basically, the more subject properties it has, the higher its subjecthood is, but once it is regarded as a subject, it is undoubtedly a member of the category "subject."[9]

3.2 Agent and the Figure

3.2.1 Agent   It is generally said that the agent tends to be selected as the subject. For example, Keenan (1976) argues that basic subjects 'normally express the agent of the action, if there is one.' This is a reflex of the semantics I referred to above: an agent is nearly the same as a logical subject. In order to reflect this semantic aspect on the structure of language, some theories of grammar equip some special devices, e.g.

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[9] Keenan (1976) proposes "a universal definition" of the subject, but his analysis is in fact a prototype theoretical one. In his words, 'If one NP in the sentence has a clear predominance of the subject properties then it will be called the subject.'

the hierarchy of semantic roles in Case Grammar, a-structure in LFG. The θ-role assignment at D-Structure in Generative Grammar is also a device for this purpose. Even in the Minimalist Program, which aims to exclude all semantic factors from syntax, the base positions of arguments have some effects on the semantic interpretation at LF.[10]

Cognitive Grammar adopts Prototype Theory. Langacker (1991a, 1991b) argues that 'prototypically, the subject is an agent and hence the starting point with respect to energy flow along the action chain.' It means that "being an agent" is a typicality condition for a subject, which is not necessarily satisfied by all subjects. For example, an agent in a passive sentence cannot be selected as subject because it doesn't satisfy other important typicality conditions for being subject, e.g. "being given information," "being empathized with by the speaker."

The category 'agent' is also based on typicality conditions. A prototypical agent has properties like "being the starting point of energy flow," "having an intention to cause the event," "responsible for the result of the event." Nishimura (1993) argues that some subjects which have been analyzed as experiencers are actually non-prototypical agents. Consider the examples below.

> (33) a.   John broke the window in order to wake up Mary.
>   b.   John broke the window while playing baseball.
>   c.   John broke his leg in a traffic accident.   (Nishimura 1993)

John in (33a) is a prototypical agent, being the starting point of energy, an intender, and a person responsible for the result. *John* in (33b) is not an intender because he did not broke the window deliberately, but he is the starting point of energy flow and he shoulders responsibility for the result, so he is a non-prototypical agent. *John* in (33c) is a good example of experiencer subject. He is neither being the starting point of energy nor an intender to cause the accident, but he is a peripheral agent because he has some degree of responsibility on what happens to his body parts or everything he possesses.

This theory indicates that what we call instrumental subjects are also non-prototypical agents lacking intention. Consider (34) below.

> (34) The axe broke the window.   (DeLancey 1984)

According to DeLancey (1984), sentence (34) is an unacceptable answer in a situation where the speaker is asked what happened, but some contexts make it acceptable. Consider (35).

> (35) a.   The axe fell off the shelf and broke the window.
>   b.   As I was swinging the axe over my head it hit the window and broke it.
>   (ib.)

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[10] Note that some Minimalists analyze the subject of an unaccusative verb as originating in an object position. If this analysis meets our intuitive judgements, it may support the analysis that the property "being an agent" must play a special role in deciding subject.

He argues that (34) is unacceptable because *the axe* is not a true agent, and examples in (35) are acceptable because the contextual supports clarify the degree of agentivity of *the axe*. The different acceptability of (34) and (35) indicates that the subject of an English transitive sentence is normally interpreted as a true agent.

In summary, "being an agent" is an important typicality condition for a subject. Allowing a lot of peripheral members of the category, this property contributes to subject decision more effectively than some necessary and sufficient conditions do.

3.2.2 Figure/Ground Alignment   Study in the field of cognitive psychology argues that when we perceive what we see, we designate figure/ground alignment. "The figure" is a region enclosed with a boundary and standing out against the ground. "The ground" is a space lying behind the figure. There is a tendency in figure/ground selection: an entity which is moving or conceptually movable tends to be selected as figure, and an entity which is often fixed and available as a landmark in estimating the location of the figure tends to be regarded as a part of the ground. Talmy (1978) argues that the figure/ground alignment is reflected in language. Consider (36) below.

> (36) a.   The bike is near the house.
>   b. ? The house is near the bike.   (Talmy 1978)

In (36a), *the bike* is the figure and *the house* is a part of the ground.[11] The awkwardness of (36b) is due to an odd selection of figure and ground. A fixed element *the house* is selected as the figure and a movable element *the bike* is selected as a part of the ground in (36b).

Langacker (1991a, 1991b) suggests a universal definition of subject: the subject is the primary figure of the state of affair described by the sentence. He shows it in a bleaching process of agentivity. Consider the examples below.

> (37) a.   Jones threw a rock.
>   b.   Holmes severely injured his opponent.   (Langacker 1991b)
> (38) a.   Irving persuaded me to clean the garage.
>   b.   I urge you to give up that crazy idea.   (ib.)
> (39) a.   Several witnesses saw the accident.
>   b.   She remembered her childhood.   (ib.)
> (40) a.   The fifth floor contains a library.
>   b.   A library occupies the fifth floor.   (ib.)
> (41) a.   Marsha resembles Hilda.
>   b.   Hilda resembles Marsha.   (ib.)

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[11] Talmy characterizes "the ground object" as a landmark for estimating the position of the figure, but I use the term "ground" as the background space against which the figure stands out. I do so because this usage seems to be closer to that of cognitive psychology.

<Figure 1>
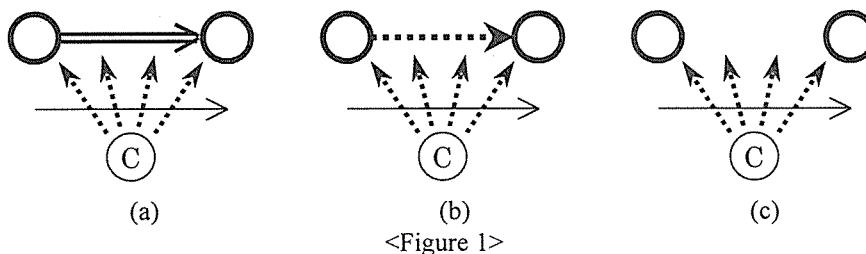
The circles represent the participants of the state of affairs. C is the conceptualizer, and the broken arrows represent the paths of the eyes. The double arrow is the energy flow, the starting point of which is an agent.

Langacker shows the subjects in (37) as prototypical ones. They are prototypical agents causing an energy flow. This kind of relationship can be represented in Figure 1a. The subjects in (38) deviate a bit from a prototypical agent because the energy flow is not physical but mental. Next, let us consider (39). Although there is no energy flow starting from the subjects, there is a kind of objective asymmetrical relationship starting from the subjects. This asymmetrical relationship takes the place of the energy flow and enables us to construe these subjects as agents. Figure 1b represents this situation.

Consider (40) and (41). There is neither energy flow nor asymmetrical relationship as in (39). The relationship between the participants is symmetrical in (41). In such a situation, our way of viewing is comparatively unrestricted. That is because we accept both (a) and (b) patterns in (40) and (41). The difference between (a) and (b) is in the figure/ground alignment. The elements construed as the figure are selected as subjects. In Figure 1c there is no factor that restricts the conceptualizer's eye-movement.

The gradation in (37)-(41) indicates that "being an agent" is a typicality condition for the figure. This is a natural consequence because an entity giving out some energy usually attracts our attention.[12]

Remember that our way of viewing can change the figure/ground alignment in a situation where the mobility of one participant is nearly equal to that of another. For example, we can say *John stands near Mary* and *Mary stands near John*. The selection of the figure depends to a certain extent on the point of view from which we describe the situation.

The point of view is very similar to the empathy hierarchies suggested by Kuno (1976). He suggests that the hierarchy (42) tends to coincide with (43).

(42)   *The Surface Structure Empathy Hierarchy*: It is easiest for the speaker to empathize with the referent of the subject; it is next easiest for him to empathize with the referent of the object... It is most difficult for him to empathize with the referent of the by-agentive.
Subject $\geq$ Object ... $\geq$ By-Agentive   (Kuno 1976)

(43)   *The Speech-Act Participant Empathy Hierarchy*: It is easiest for the speaker to empathize with himself (i.e., to express his own point of

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[12] Langacker (1997b) calls this asymmetrical relation an event path, and regards it as a kind of reference-point construction. On reference-point construction, See section 3.3.4.

view); it is next easiest for him to express his empathy with the hearer; it is most difficult for him to empathize with the third party, at the exclusion of the hearer or himself.

Speaker ≥ Hearer ≥ Third Person (ib.)

Langacker (1991a) expands this kind of hierarchy, taking animate/non-animate and concrete/abstract distinctions into consideration. His hierarchy is (44).

(44) speaker > hearer > human > animal > physical object > abstract object[13]

(Langacker 1991a)

He points out that a prototypical subject ranks in a high position in (44).

I propose that this hierarchy has an important effect on the figure/ground decision. The higher it ranks, the more easily it attracts the speaker's attention. The mobility, which makes the difference between *the bike* and *the house* in (36), can also be integrated into this hierarchy.

3.3 Informational Property of Subject

3.3.1 Sentential Topic, or Theme   A subject is sometimes said to be the topic of a sentence. For example, Chafe (1976) comments that a topic is a premature subject. Givón (1976) carries out an interesting analysis where a morpheme of subject-verb agreement is a residue of an agent pronoun and where a topic noun before the pronoun has evolved into a subject. Similarly, Lehmann (1976) and Shibatani (1991) argue that a topic has been integrated into a subject in Indo-European languages. Note that "a topic" here is something similar to "a theme" because it is a notion defined in a sentence.

Here is a definition of "a topic" by Lambrecht (1994): 'A referent is interpreted as the topic of a proposition if in a given situation the proposition is construed as being about this referent, i.e. as expressing information which is relevant to and which increases the addressee's knowledge of this referent.'

This kind of information has a significant effect on the word order of a sentence: i.e. a topic or a theme tends to be placed at the beginning of a sentence. Firbas (1966a, 1966b) presents a word order principle based on Communicative Dynamism, which represents the heaviness or importance of information of each element in a sentence. In his definition, 'The theme is constituted by the sentence element (or elements) carrying the lowest degree(s) of Communicative Dynamism within the sentence.' The Communicative Dynamism of the elements gets higher and higher as we go along the sentence. This is why a theme or a topic, which by definition carry light information, tends to come first in a sentence.

In spite of these analyses, we cannot define a subject as the theme or the topic of a sentence, because we have a lot of English sentences whose subjects are clearly not

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[13] The so-called Silverstein Hierarchy, which is suggested in order to account for the case marking patterns of ergative languages, is one of the same kinds. It describes inherent properties of elements in far more detail.

the topics. Consider (45).

    (45) A: Who broke the window?
         B: JOHN did/broke it.

John in (45), which is a subject, is not a topic of this sentence. This example indicates that a subject in English is not necessarily a topic. However, adopting Prototype Theory, we can state that the property of "being a topic" is a typicality condition. A prototypical subject is the topic or the theme of a sentence.

3.3.2 Given Information and Definiteness   It has long been asserted that a subject tends to carry given information.[14] Prince (1992) demonstrates the tendency by investigating a particular naturally-occurring text.

    Chafe (1976) notes that the given/new distinction has to do with the hearer's consciousness: a given information has been activated in the hearer's mind at the time of the utterance, and new information is not activated at that time. Lambrecht (1994) points out that the consciousness of the hearer has a degree. Information inferable from the preceding context or salient in the hearer's surroundings is activated to some extent and can be referred to with little effort. Furthermore, even if the information has appeared in context, its activation level gets lower and lower until it is mentioned again.

    The tendency of the subject to carry given information is reduced to its tendency to be a topic. It is because an element carrying given information can naturally be a topic, but an element carrying new information is seldom selected as topic. The degree of the hearer's consciousness presented by Lambrecht is simultaneously a degree of facility to be selected as topic. For instance, we feel some difficulty in selecting something topic in a situation where we referred to it five minutes before.

    Definiteness is also stated to be an important factor to be a subject. Prince (1992), again, actually observes the tendency of a subject to be definite.

    Chafe (1976) says that we use a definite article when we have a particular object in mind and believe that the hearer is able to identify it. Following him, Lambrecht (1994) points out that the identifiability of an object shows a dichotomous distribution, i.e. it is identifiable or not.

    Langacker (1991a) suggests from a cognitive perspective that definiteness is a typicality condition for a subject. He points out that 'An indefinite subject often seems awkward and is commonly avoided by means of a special construction.' Examples follow below.

    (46) a.   ??A lake is in that valley.
        b.   ? Migraine headaches plague Sally.
        a'.   There is a lake in that valley.
        b'.   Sally is plagued by migraine headaches.   (Langacker 1991a)

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[14] Kuno (1976) analyzes this type of informational status as a sort of empathy. In order to divide the inherent and temporary properties of elements, I don't use the term "empathy" for this kind of temporary informational status.

(46a) and (46b) include indefinite subjects and are actually awkward.[15] (46a') and (46b'), avoiding indefinite subjects, are more natural than (46a) and (46b).

Prince (1992) argues that 'The apparent tendency for subjects to be definite is seen to be simply a reflex of their tendency to be discourse-old,' i.e. given information. Because given information is often selected as topic as I suggested above, I reduce it to the tendency of subject to be a topic.

Lambrecht (1994) suggests a hierarchy of accessibility, based on identifiability, which corresponds to definite/indefinite distinction, and activation levels, which has to do with given/new distinction. (47a) represents the diagram expressing these distinctions. (47b) is the hierarchy of information, where the accessibility goes up as the number increases.[16]

(47) a.
```
                                      ┌─ unanchored (1)
                       ┌─ unidentifiable ─┤
                       │                  └─ anchored (2)
        IDENTIFIABILITY ┤
                       │                              ┌─ inactive (3) ┌─ textually (4)
                       └─ identifiable — ACTIVATION ─┤  accessible ─┤─ situationally (5)
                                                      └─ active (7)  └─ inferentially (6)
```

b. (1)   unidentifiable/brand-new
    (2)   unidentifiable anchored/brand-new anchored
    (3)   inactive/unused
    (4)   textually accessible
    (5)   situationally accessible
    (6)   inferentially accessible
    (7)   active/given   (Lambrecht 1994)

The word "accessibility of an element" means the degree of ease with which the hearer can get a mental representation of the referent of the element. For example, if I say *Lambrecht*, who appeared in the text above and corresponds to (7) in (47), you will easily get a mental representation of him: if I say *Bill Clinton*, who is famous and corresponds to (3), you will get a mental representation of him with a little effort: if I say *my father*, who I think is not known to the readers and corresponds to (2), you will get a mental representation of a person whom you assume to be my father, with some difficulty.

He argues that accessibility has to do with the topic: the more accessible an element is, the more easily it is selected as topic. From this perspective, the properties of "carrying given information" and "being definite" are typicality conditions for a

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[15] (46b) is better than (46a) because the subject selection in the former is supported by some agent properties of *migraine headaches*. As I discussed in 3.2.1, agentive property is an important typicality condition of subject.

[16] "Anchored" means "being modified by an expression representing a relation between the referent and something identifiable for the hearer." e.g. *a guy I work with*. "Textually accessible" is the state of an element which appeared in the discourse long before and is getting inactive in the hearer's consciousness. "Situationally accessible" is the state of an element which is in the physical space around the hearer and noticeable to him or her. "Inferentially accessible" is the state of an element which is inferable from information in the preceding discourse.

topic.

3.3.3 Reference-Point Construction   Langacker (1993, 1995a) suggests a basic human cognitive device called "reference point" and argues that it is used in a lot of aspects of language.

When we look for the North Star, we first find the Big Dipper and mentally trace a path along the end of it. In this situation we are using the reference-point construction. It is difficult for us to find the North Star at first glance because it is visually featureless and not salient. The Big Dipper, however, is very easy to spot because of its characteristic shape. Because of their characteristic arrangement of location, we can make good use of the Big Dipper to find the North Star. In this way we can say that the Big Dipper is a reference point and the North Star is a target.

<Figure 2>
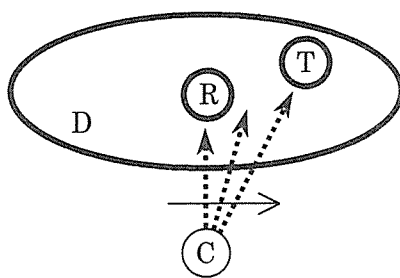
In Figure 2, C is the conceptualizer, i.e. the speaker or the hearer. The broken arrows represent the paths of mental contact, or the eyes of the C. The horizontal arrow above C shows that C's eyes move from left to right. R is the reference point, and T is the Target. The ellipse D is the dominion of the reference point, in which C searches for T.

When T is not salient enough for a direct accession, C first finds R, which is salient and easy to find and, moreover, in some special relation with T. Then C searches inside the R's dominion and achieves an accession to T. We can see this construction in the transition of information in the following discourse. Consider example (48).

(48)   You know that hunk who works in that bank? Well, the woman he's living with just got an abortion.   (Langacker 1993)

In (48), *that hunk* is used as a reference point for *the woman*. The motivation for the usage of the reference point is the difficulty of a direct accession to *the woman*: *that hunk* is accessible because the hearer knows him, but *the woman* is low in accessibility because the hearer doesn't know her. In this sense, a reference point is a preparatory step by way of which the conceptualizer can get to the target.

Langacker argues that a target reached by way of a reference point can be used as a reference point for the next target. See Figure 3.
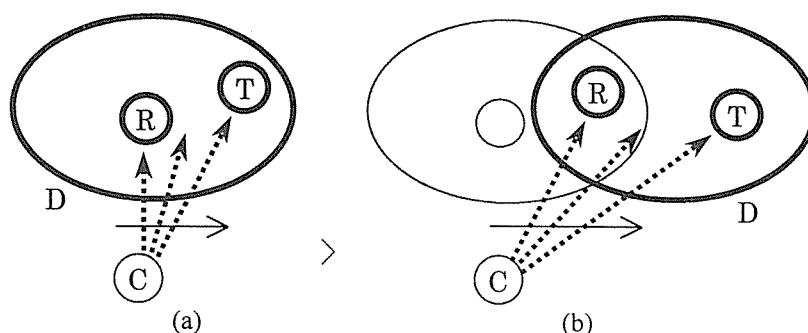
<Figure 3>

Figure 3 describes a transition of reference points. In Figure 3a, T receives high accessibility after it is reached by way of R. Then in Figure 3b, it can turn into a reference point for something else less accessible. At this point, the former reference point fades away into the background. Consider example (49).

> (49)   We sailed on a Japanese boat, leaving the icy winds of January to enter the sunny climate of the Suez Canal. At Alexandria we took on new passengers, Arabs and Hindus — in fact we took on a new world! At sunset the Arabs would place their mats on deck and face Mecca and chant prayers.   (Chaplin, *My Autobiography*)

The writer uses *we* as reference point and refers to *the Suez Canal* at the end of the first sentence. Then *Alexandria*, which is inferable from *the Suez Canal*, is selected as a reference point in order to introduce *Arabs and Hindus* into the discourse. Next, *Arabs* turns into a reference point for an introduction of their interesting customs. Note that each reference point in (49) is the topic of each sentence. This example indicates that we use the reference-point construction in deciding topics.

   As I wrote above, the reference point is very useful when the accessibility of the target is very low. In order to be a reference point, an element must be highly accessible: i.e. it must be ranked high in the accessibility hierarchies of Lambrecht in the preceding section. The higher it is in the hierarchy, the more easily is it selected as a reference point.

3.4 Typicality Conditions for a Subject

As a summary of the discussion so far, I present a hierarchical diagram (50), which represents the relations between the typicality conditions I have proposed above. A subject is prototypically the sentential figure and the sentential reference point. As presented on the upper side of the diagram, the figure is frequently an agent and an element which attracts the speaker's empathy. As shown on the lower side, a reference point is often a topic, which typically carries given information and is definite.

(50)
```
                                          ⟋ the starting point of energy flow
                             ⟋ agent ⟸──── intender
             ⟋ the figure ⟨           ⟍ being responsible
            ⟋                ⟍ attracting the speaker's empathy
   subject ⟨
            ⟍                          ⟋ given information
              reference point ── topic ⟨
                                        ⟍ being definite
```
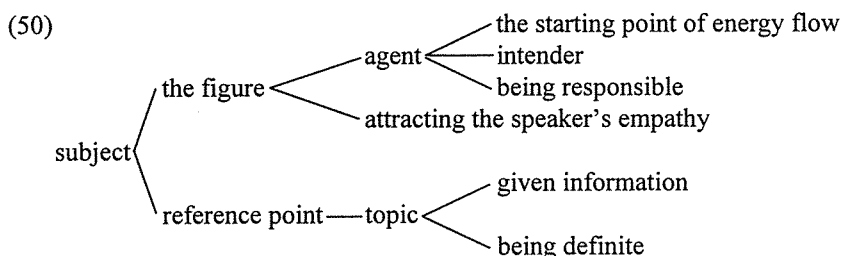
An advantage of the Prototype Theoretical approach to subject decision is that it restricts the range of subject candidates and simultaneously allows language variations. Languages differ in the properties that they regard as important, and that difference on this point results in different kinds of subject selection.

Li and Thompson (1976) suggest that languages be classified according to subject-prominent and topic-prominent properties. The two parameters on subject and topic are very similar to the two main typicality conditions I presented above: a prototypical subject is the intersection of the sentential figure and the sentential reference point. I reduce these parameters to the degree of importance of the figure and the reference point in each language. A subject-prominent language emphasizes the property of "being the figure" and a topic-prominent language regards the property of "being the reference point" as important in selecting a subject.

As Li and Thompson point out, English is a subject-prominent language. A comparison with Japanese, which has a topic-prominent property, shows us the different characteristics of the two types of languages.

Nakamura (1997) suggests from a cognitive perspective that English is sensitive to the figure/ground alignment and that Japanese is sensitive to the reference-point construction. His analysis accounts for a lot of differences between English and Japanese. First, Japanese has what we call a double-subject construction like (51) and an illogical subject construction like (52).

(51)   Sakana   wa   tai   ga   oisii.
        fish   TOP   red:snapper SUBJ   delicious
        'Fish, red snapper is delicious.'   (Langacker 1997a)

(52) a.   (In a café)   Watasi   wa   koohii   desu.
                          I   TOP   coffee   be
           'As for me, what I order is coffee.'

     b.   (In a café)   *I am coffee.

Langacker (1997a) analyzes the first subject in (51) and the subject in (52) as reference points for the rest of these sentences.[17] Constructions like these are not allowed in English.

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[17] Strictly speaking, *wa* is not a subject marker but a topic marker. However, we can compose sentences with *ga*-marking like (ii), where the *ga*-marked elements are emphasized.

(ii)   a.   Sakana ga tai ga oisii.
       b.   Watasi ga koohii desu.

These sentences indicate that the *wa*-marked elements in (51) and (52) are actually subjects.

Next, Ikegami (1981) refers to the fact that English often makes sentences with inanimate personified subjects, whereas these Japanese counterparts are not acceptable or unusual. Examples are below.

(53) a. The heat makes me feel languid.
    b. *Nekki ga   watasi wo   daruku   kanji-saseru
       heat SUBJ me   OBJ   languid feel-make   (Ikegami 1981)
(54) a. The heavy rain prevented us from going out.
    b. *Ooame   ga   watasitati ga   gaisyutusuruno wo   samatageta.
       heavy rain SUBJ we   SUBJ going out   OBJ   prevented

Also different are the basic forms of psyche verbs. In English, their basic forms *surprise, delight, disappoint*, etc. are all transitive verbs, and we have to passivize them if we want to take the patient's point of view, e.g. *be surprised, be delighted, be disappointed*. In Japanese, however, the basic forms *odoroku, yorokobu, gakkarisuru.* are all intransitive verbs, and we have to make causative forms if we want to take the causer's point of view, e.g. *odorokaseru, yorokobaseru, gakkarisaseru.* These examples indicate that English often composes a sentence along the energy flow, and that Japanese does not regard the energy flow as being important as English does.

4   A COGNITIVE ANALYSIS OF ENGLISH INVERSION

Based on the typicality conditions proposed above, I will analyze English inversion. In particular, I will observe the properties of preverbal and postverbal constituents, and clarify when the inverted word order is allowed in English.

4.1 The Primary Reference Point

There is good evidence indicating that the preverbal constituent in English inversion is the reference point for the postverbal one. As Birner (1992, 1994) points out, the preverbal constituent is often more discourse-familiar than the postverbal one. The preverbal one almost always contains a definite element conveying given information, which is very high in Lambrecht's information hierarchy and very easy to access for the hearer. The postverbal one, however, often conveys new information, which the speaker doesn't expect at the time of the utterance. In this way, using the former as a reference point for the latter is more appropriate than trying a direct accession to the latter. Consider (55), which is a pair of a normal sentence and its inverted counterpart. Figure 4 represents the transitions of the conceptualizer's eyes in these sentences.[18]

(55) a.   The cat is sleeping on the sofa.
    b.   On the sofa is sleeping the cat.

---

[18] Langacker (1997b) suggests that the relation between an entity and a landmark with which the conceptualizer estimates its position is also considered to be a reference-point construction. Remember the relation ship between the North Star and the Big Dipper.

(a) normal word order   (b) inverted word order

<Figure 4>
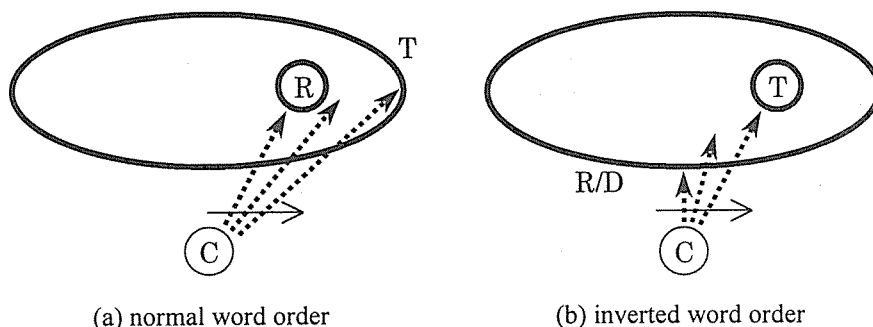
R accords with D in the latter case, because R represents a spatial domain and T is contained in it. The conceptualizer in Figure 4a first finds *the cat*, and then observes where it is, but in Figure 4b first pays attention to the location, which is easily accessible to the hearer, and then finds *the cat*. Even if *the cat* is not easily accessible at the time of the utterance, when the conceptualizer looks at the space *on the sofa*, then he or she immediately notices it there.

This construction is very useful when the speaker wants to guide the hearer's eyes because the speaker designates the order of information. Consider Birner's examples in (25). I repeat them as (56).

> (56) a.   McPherson proffered the cigar and a fat hand reached forward and accepted it. The round face was expanded in a grin of anticipated pleasure, and *into the wide mouth went half the cigar*, to be masticated by strong but tobacco-stained teeth.
>
> b.   Shiny and red, the apples hung over their heads. One squirrel stood on his hind legs. He stretched up until he was as thin as a weasel, but still the biggest apple hung out of his reach. Another squirrel leaped to the branch above it. He knew a better way than stretching! His sharp teeth gnawed the string that held it. *Down plopped the apple on the first squirrel's head.*   = (25)

In these inverted sentences, the postverbal constituents are not newly introduced to the scene, but the word order guides the hearer's eyes. In (56a), *into the wide mouth* expresses the motion of *the cigar*, but simultaneously guides the hearer's attention along the path, at the end of which appears *the cigar*. Similarly in (56b), *down* represents the motion of *the apple*, but simultaneously guides the hearer's attention along the path, where appears *the apple*. The guiding effect makes the descriptions vivid, making the hearer feel as if he or she were actually watching the scene.

The eye-guiding effect is also useful for introducing new information to the discourse, because the postverbal constituent often refers to element whose accessibility is low. This is why English inversion has been said to have a presentational function. Every English inversion does not necessarily introduce a new entity into the discourse, but it is undoubtedly suitable for the introducing purpose.

The difference in the accessibility of the two constituents indicates that the

preverbal constituent works as a reference point for the postverbal one. This is the best motivation for the inverted word order.

4.2 The Primary Figure

The postverbal constituent in English inversion is clearly the figure, standing out against the background. Figure 5 represents the figure/ground arrangement in (57), preserving the reference-point construction in Figure 4.

(57) a.   The cat is sleeping on the sofa.
     b.   On the sofa is sleeping the cat.   = (54)

(a) normal word order   (b) inverted word order

<Figure 5>
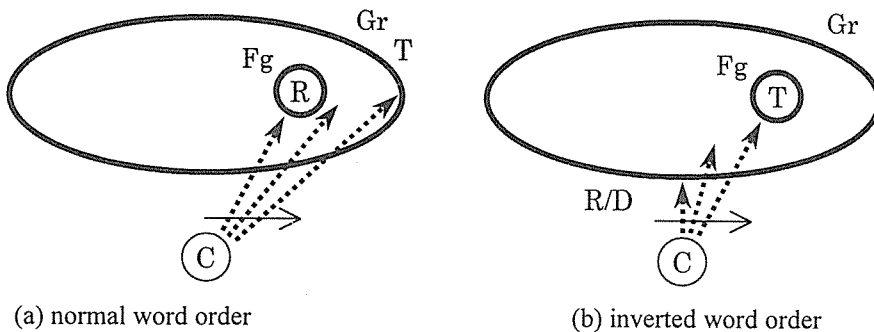
In Figure 5, Fg stands for the figure, and Gr stands for the ground. As Talmy (1978) points out, an entity which is moving or conceptually movable is naturally selected as the figure, whereas a space, which never moves, is naturally selected as a part of the ground. In (57) above, *the cat* is appropriate for the figure, and *the sofa* or the space *on the sofa* is appropriate for the ground.

The contrast of the empathy for the entity *the cat* and the space *on the sofa* decides the figure/ground arrangement. That is why the arrangement remains the same in Figure 5a and Figure 5b. The difference is in the reference-point selection. The primary reference point is *the cat* in Figure 5a, but *on the sofa* in Figure 5b. It means that the two important typicality conditions for a subject are divided into two elements in English inversion.[19]

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[19] This analysis may provoke a question: what is the difference between locative inversion and locative preposing? Consider (iii).

(iii)   On the sofa the cat is sleeping.

The cat in (ii) is undoubtedly the figure because it ranks high in the empathy hierarchy. Moreover, it is construed as an agent. Consider (iv).

(iv) a.   *On the sofa the cat was.
     b.   ??On the sofa the cat lay.   (Michael T. Wescoat p.c.)

Since locative preposing always requires a verb with energy flow, the subject is always interpreted as agent. Moreover, there is evidence that the preverbal locative does not always work as a reference point for the subject. Consider (v).

4.3 Restriction on the Energy Flow

As we observed in section 3, English is not very sensitive to the informational status of the sentence elements. Rather, because it is a subject-prominent language, it is likely to reflect the figure/ground arrangement in the word order. In fact, English puts the figure in the sentence-initial position and represents the informational status with the stress, whereas other languages adopt different strategies, as in (58).

(58) a.   Q: What happened to your car?
          A. in English: My car/It broke DOWN.
          A. in Italian: (La mia macchina) si è ROTTA.
          A. in French: (Ma voiture) elle est en PANNE.
          A. in Japanese: (Kuruma wa) KOSHOO-shi-ta.
     b.   Q: I heard your motorcycle broke down?
          A. in English: My CAR broke down.
          A. in Italian: Si è rotta la mia MACCHINA.
          A. in French: C'est ma VOITURE qui est en panne.
          A. in Japanese: KURUMA ga koshooo-shi-ta.   (Lambrecht 1994)

Some languages, e.g. Italian, represent the informational status of the sentence elements with the word order, but English does not. This fact indicates that English gives priority in the word order to the figure over the reference point.

I suggest that English is the most sensitive not to the figure but to the energy flow. This is observed in section 3.4. English often selects an agent as subject in a situation where other languages, e.g. Japanese, makes a different selection.

This is critical in composing inversion. As Levin and Rappaport Hovav (1995) point out, inverted word order always occurs with a verb of existence or appearance. The situation described by this kind of verb has no or very weak energy flow. I observed in (37)-(41) that the weakened energy flow makes our transition of eyes relatively unrestricted. This is what is happening in English inversion.

The analysis of inversion with no energy flow accounts for the fact that English inversion is hardly possible with some kinds of adverbs. Consider (59).

(59) *Into the classroom stepped Mary voluntarily.

In (59) *voluntarily*, which emphasizes the intention of an agent, makes the verb *stepped* active. Because the action verb has an agent *Mary*, the inverted word order is not allowed.

This analysis also accounts for the fact that *by*-agentive phrase seldom occurs in English inversion. Consider (60) and (61).

(v)   *Near *Ralph*, *he* saw a snake.   (van Hoek 1997)

Ralph and *he* cannot refer to the same person in (v). This example indicates that the subject has the preposed element in its dominion.
      These examples show that the figure and the reference point accord in locative preposing. This is why we recognize at first glance *the cat* in (iii) as the subject of the sentence.

(60) ??Among the guests of honor was seated my mother by my friend Rose.

(Bresnan 1994)

(61) a.   The picture is hung on the wall.

b.   #The picture is hung on the wall by John. (in a reading of "state")[20]

As we observe in the contrast in (61), *by*-agentive generally makes a state of affair active. *By*-agentive in (60) describes the state of affair *was seated* as John's action. Because the action necessarily has an energy flow, the sentence cannot describe the pure existence of *Mary*.[21]

Just like in (40) and (41), our way of viewing is comparatively free if there is no energy flow. Consider these examples again.

(62) a.   The fifth floor contains a library.

b.   A library occupies the fifth floor.   = (40)

(63) a.   Marsha resembles Hilda.

b.   Hilda resembles Marsha.   = (41)

The difference between these sentences and inversion is in the figure/ground arrangement. The figure and the reference point coincide in these sentences, but they don't accord in inversion. If there are two elements attracting nearly the same degree of empathy, either of them can be the figure. In (62) and (63), where a comparison occurs between two spaces or two human beings, the reference point is naturally selected as the figure because it is more salient in the hearer's knowledge. In inversion, however, the reference point is not selected as the figure because the space is inherently less salient than the entity in it. Remember (36) repeated as (64), and consider (65).

(64) a.   The bike is near the house.

b.   ? The house is near the bike.   = (36)

(65) a.   ?The sofa is under the cat.

b.   ?Under the cat is the sofa.

As I wrote in section 3.2.2, Talmy reduces the low acceptability of (64b) to the odd figure/ground arrangement, i.e. the difference in the mobility of *the bike* and *the house*. The same holds in (65). *The cat* is conceptually movable and naturally attracts the speaker's empathy, so it is naturally selected as the figure. On the contrary, *the sofa* is usually stable in a location and does not attract the speaker's empathy, so it is naturally selected as a part of the ground. The awkwardness of (65b) indicates that the postverbal constituent in inversion is the figure.

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[20] The mark # means that this sentence is improper in this context. (61b) is acceptable in a reading where John has a daily routine of hanging the picture on the wall.

[21] This restriction is applied to inversion with a verb of existence. Inversion with a verb of appearance can occur with *by*-agentive. Consider (vi).

(vi)   Into the room was pushed Mary by John.

Verbs of appearance often imply the movement of an entity. Although verbs of appearance are regarded as unaccusative verbs, they are clearly more active than verbs of existence.

5   PROPERTIES OF ENGLISH INVERSION

Based on the analysis proposed above, I will explain the strange properties of inversion I saw in section 2: the subject behavior of two constituents, the restriction on the verb, and the restriction on the semantic aspect of the preverbal constituent.

5.1 Subject Behavior of the Two Constituents

Summarizing the preceding section, I argue that the preverbal constituent in English inversion is the sentential reference point and that the postverbal one is the sentential figure. The two divided prototypical properties of subject account for the divided subject behavior in this construction. I suggest that some grammatical subject behavior is reducible to the characteristic of the reference point, and other behavior is reducible to that of the figure.

5.1.1 Subject in a Tag Question   The preverbal constituent in inversion is often selected as subject in the tag question.

    (66) a.   On the sofa is sleeping a cat, isn't there?
         b.   *On the sofa is sleeping a cat, isn't it?

When the postverbal constituent is marked by a definite article, the acceptability changes.

    (67) a.   *On the sofa is sleeping the cat, isn't there?
         b.   ??On the sofa is sleeping the cat, isn't it?   = (9)

A very similar phenomenon occurs in a normally ordered sentence.

    (68) a.   ? Then a man emerged, didn't there?
         b.   *Then a man emerged, didn't he?
         c.   *Then the man emerged, didn't there?
         d.   Then the man emerged, didn't he?

The example (68b) indicates that an unidentifiable new element introduced into the scene is inappropriate for a subject in a tag question. Moreover, (68c) and (68d) shows a tendency that the figure is preferred to the reference point. The marginal acceptability of (68a) may be a consequence of it: an unbounded space in front of the hearer, though it is identifiable and familiar to him, is hardly construed as a figure.

5.1.2 Subject Raising   The preverbal constituent in inversion undergoes a so-called subject raising, whereas the preverbal constituent cannot be raised in the same situation.[22]

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[22] Cognitive Grammar doesn't admit any movement of syntactic elements. It doesn't admit invisible, purely syntactic elements as traces, either. Langacker (1997c) provides some kinds of conceptual groupings,

(69) a. Over my windowsill seems ____ to have crawled an entire army of
ants.

b. *An entire army of ants seems over my windowsill to have
crawled ____.   = (10)

Langacker (1995b) argues that the raised element in the so-called raising
construction is the reference point for the whole event. Consider the examples in (70).

(70) a. Another war is likely (to break out).

b. Q: Who is coming to your party?
A: Well, Tom is likely, and Sally is certain.

c. Q: Who is coming to your party?
A: I expect Tom and Sally.   (Langacker 1995b)

These examples show that in a certain context, referring to the so-called raised
element is enough to convey information that the hearer wants to know. *To*-infinitive
after it is no more than a supplement. In this such a case, the so-called raised element
may metonymically represent the state of affair including the element. For example,
when a speaker says, "Tom is likely," this sentence means that Tom's coming to the
party is likely. *Tom* works as a reference point for *Tom's coming to the party* because
an element is more highly empathized with and more easily accessible than an
abstract state of affair.

If Langacker's analysis of the raising construction is right, the same should hold
on inversion. We can naturally predict that the preverbal constituent undergoes a
subject raising because it is the reference point for the whole event, and that the
postverbal one cannot be raised because it is not the reference point.

5.1.3 That-Trace Effect   Raising the preverbal constituent may cause the *that*-
trace effect, whereas raising the postverbal one has nothing to do with this
phenomenon.

(71) a. *It's in these villages that we all believe that ____ can be found the
best examples of this cuisine.

b. It's in these villages that we all believe ____ can be found the best
examples of this cuisine.   = (12)

Culicover (1993) presents some examples indicating that *that*-trace effect should not
be accounted for by principles in syntax. Consider (72).

(72) a. Robin met the man {Op$_i$ that/who$_i$} Leslie said that *(for all intents
and purposes) t$_i$ was the mayor of the city.

b. This is the tree Op$_i$ that *(just yesterday) t$_i$ had resisted my shovel.

c. I asked what$_i$ Leslie said that *(in her opinion) t$_i$ had made Robin give
a book to Lee.   (Culicover 1993)

---

phonological groupings, and flexible symbolic linkages between them. In his system, we can arrange a
conceptual grouping skipping over some elements.

The examples in (72) are acceptable if the elements in the parentheses are present. It is difficult for us to designate a syntactic analysis accounting for the critical difference between presence and absence of an adverbial phrase.

Deane (1992) suggests that *that*-trace effect is due to a complicated parsing: *that* may be ambiguous between a complementizer and a relative pronoun. Strictly speaking, it cannot explain the acceptability of (72), but it is a reasonable solution.

I assume that there be a constraint on word order: a complementizer *that* cannot be followed by an embedded verb. This constraint may be a prevention of Deane's dilemma. If there is a constraint like this, (71a), which includes a raised preverbal constituent, can be excluded because of a violation of this constraint.

5.1.4 Subject Island   Both the preverbal and postverbal constituents form an island against an extraction. No element can be extracted from them.

(73) a. *Which forest were [in ____] found a lot of wolves.
     b. *What were in this forest found [a lot of ____]?   = (13)

Deane (1992), adopting some functional analyses on island constraint, argues that an element can be extracted if it has a topical property and its base-generated position has a focal one. There are useful tests for finding topical and focal properties. The test for the former is using topicalization, and the test for the latter is using contrastive construction. As for inversion, the preverbal constituent has no focal property and an element in the postverbal one has no topical property.[23]

(74) a. ??In this forest were found a lot of wolves, but not on that mountain.
     b. *Speaking of wolves, in this forest were found a lot.

The awkwardness of (74a) is due to the lack of focal property of *in this forest*, and the unacceptability of (74b) is due to the lack of topical property of *wolves*. Extraction out of the preverbal and postverbal constituents doesn't fulfill both of the constraints, so neither of them allows an extraction.

5.1.5 Subject-Verb Agreement   The postverbal constituent participates in the agreement with the verb, whereas the preverbal one has nothing to do with the agreement.

(75) a.   Under the water lie a number of wrecked ships.

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[23] Firbas (1966b) and Kuno (1972, 1976) call inversion a "themeless sentence" because this sentence is not making "a comment about something." However, the preverbal constituent has some topical property. Consider (vii).

  (yii) Speaking of this forest, in it were found a lot of wolves.

Moreover, the preverbal constituent can be relativized, which Kuno assumes to be a characteristic of a theme. Consider (viii).

  (viii) John ran into the house out of which came a strange sound.   (Kuno 1976)

The acceptability of these sentences indicates that the preverbal constituent, or an element in it, has some topical property.

      b.   Under the mountains lies a large amount of gold.   = (14)

(76) a. *Under the water lies a number of wrecked ships.

      b. *Under the mountains lie a large amount of gold.

I assume that a subject-verb agreement is in fact a figure-verb agreement. The verb phrase always describes a state or action of the figure, which is the most salient participant in the sentence. Even in a setting-subject construction, the verb describes a personified action of the subject.

(77) a.   The last decade has seen some amazing international developments.

      b.   This courtroom has witnessed several important trials.

<div align="right">(Langacker 1997a)</div>

The verbs *see* and *witness* in (77) describe the actions of the personified subjects. If the subjects in these examples were not figures, different verbs might be selected: i.e. another method like a preposing would be sufficient to emphasize the topical property of *the last decade* and *this courtroom*. The selection of verbs like *see* and *witness* indicates that the subjects in these sentences are not superficial but true subjects.

    Note that the figure is almost always enclosed with a boundary and has a number and a gender. This characteristic of the figure is suitable for the agreement phenomena.

    If this observation is right, we correctly predict that the postverbal constituent takes part in the subject-verb agreement because it is the figure in the sentence.

5.1.6 Controller for PRO   The postverbal constituent can be regarded as the subject of a participle, but the preverbal constituent or an element in it cannot be interpreted as the subject of a participle.[24]

(78) a. *On the hood of the Mercedes was sleeping a cat, sitting another cat.

      b. *On the hood of the Mercedes was sleeping a cat, shining under the sun.

      c. On the hood of the Mercedes was sleeping a cat, snoring contentedly.

<div align="right">= (16)</div>

Note that the figure is the center of the scene in that it stands out against the ground. The ground may have a complicated structure: there may be some relationships between the figure and some parts of the ground in a scene. These supplementary relationships can be expressed by participles, whose omitted subjects correspond to the figure because it is the center of the scene.

    As a result, the postverbal constituent is regarded as the subject of a participial construction since it is the figure.

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[24] Again, Cognitive Grammar doesn't admit an invisible, purely syntactic element such as PRO. The control phenomenon is a matter of interpretation.

5.2 Locative and Attributive Inversions

As I observed in section 2.1.1, English inversion is restricted to locative and attributive inversion. A cognitive analysis can account for this restriction.

In section 4.3, I argued that the inverted order is allowed only when there is no or weak energy flow. As we saw, locative inversion, which describes the positional relationship between the figure and the ground, has no or weak energy flow. Attributive inversion, which introduces an entity after presenting its property, has no energy flow in itself. Both of them satisfy the restriction on the energy flow, so the inverted viewing order is allowed.

75 per cent of English inversions are locative inversions, and the other 25 per cent are attributive inversions. I will argue that the former is in a majority because it is more basic than the latter.

We find a gradation between locative and attributive phrases in VP inversion. Consider (79)-(81).

> (79) a.   The man who thought exercise was a waste of time, who "lived on cholesterol," who routinely worked 14-hour days even on Sundays, no longer exists.
> Instead, *sitting in the hotel dining room is a trim, tanned Californian who exudes good health.*
> b.   Included on the menu are traditional choices such as French onion soup, smoked salmon with caviar, beef with three mustard sauces and salmon herbs.   (Birner 1992)
> (80) a.   Joining O'Connor's opinion were Chief Justice William Rehnquist and Justices Byron White, Harry Blackmun, John Paul Stevens, Antonin Scalia and Anthony Kennedy.
> b.   Driven from office for accepting bribes was Senator John Williams of Vermont.   (ib.)
> (81) a.   Of the VCR's tested, the RCA VKP950 and the Hitachi VT89A were the easiest to program. They have on-screen programming, a series of prompts that appears on the TV screen to help you enter the appropriate programming information. *Highly vexing were models that have a "one-way" timer.*
> b.   Criticized often for drunkenness is John Smith.   (ib.)

Sitting in the hotel dining room and *included on the menu* in (79) are almost the same as a locative phrase, because they include locative phrases and the participles describing the manner of existence of the postverbal participants. Next, in (80), *joining O'Connor's opinion* and *driven from office for accepting bribes* are little different from a pure locative, because they represent actions, which indicates some characteristics of the postverbal constituents. However, since *driven from office* represents a change of location and *joining something* is metaphorically locative, they seem to have some locative property. Finally, *highly vexing* and *criticized often for drunkenness* in (81) have no locative property. They purely represent the attributes of the postverbal constituents. This type of inversion seems to be the base for attributive

inversion.

Locative inversion is in a majority because it is a basic type of inversion. A positional relationship is a concrete one, which is visible in the actual space. Attributive inversion is in a minority because it is not basic. A relationship between an entity and its attribute is more abstract than a positional one in the actual space. As in (82), attributive inversion often requires special words such as *also*, *another*, or comparative expressions, which express particular relationships with the preceding discourse.

(82) a.   *More serious were the injuries to his head.*   = (15a)
     b.   *?Serious were the injuries to his head.*   (Penhallurick 1984)

The requirement of the special words indicates that attributive inversion relies on the information of the preceding discourse, which is more abstract than the actual space. Difference in the concrete/abstract property is reflected in the predominance of locative inversion.

6   CONCLUSION

In this paper I observed the strange characteristics of English inversion and proposed a cognitive analysis that reduces those characteristics to semantic and informational properties of this construction. In particular, I argued that the preverbal constituent works as a reference point, and that the postverbal one is the primary figure. The subject behavior of the two constituents is reducible to these properties.[25]

Prototypically a subject is both the sentential reference point and the sentential figure, but these properties are divided into two constituents in inversion. An inverted way of viewing is usually not allowed in English, because an agent often attracts the eyes of the conceptualizer and works as a reference point. This process results in an agent priority: it gets the properties of the figure and the reference point at the same time. In this system, inverted word order is allowed only when there is no or weak energy flow in the scene, where the eyes of the conceptualizer are not attracted by an agent. The restriction of energy flow works as a restriction on the verb so that inversion always occurs with a verb of existence or appearance.

Thus, a cognitive perspective gives us a natural account for a lot of the properties and behavior of English inversion. This analysis suggests a strong connection between our way of viewing and the structure of language.

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[25] This analysis, however, cannot be applied to *there*-construction, whose reference point and figure arrangements are the same as those of inversion. As Lakoff (1987) argues, *there* in deictic *there*-construction exhibits no subject behavior, and *there* in existential *there*-construction undoubtedly works as a subject.

Note that existential *there* is derived from deictic *there*: it has got subject status and subject properties. Following Shibatani's (1991) theory of subject establishment, the more subject behavior an element exhibits, the more established as a subject it is. In this idea, the subject properties cannot be ultimately reduced to the reference point and the figure. Rather, some subject properties may strongly tend to belong to the reference point, and some others to the figure.

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