Hybrid Agreement in English*

Jong-Bok Kim

Abstract

Most of the previous approaches to English agreement phenomena have relied upon only one component of the grammar (e.g., either syntax, or semantics, or pragmatics). This paper argues that interrelationships among different grammatical components play crucial roles in such phenomenon too (cf. Kathol 1999 and Hudson 1999). The paper proposes that contrary to traditional wisdom English determiner-noun agreement is morpho-syntactic whereas subject-verb and pronoun-antecedent agreement are reflections of index agreement (cf. Pollard and Sag 1994). The present hybrid analysis of English agreement shows that the importance of the interaction of different components of the grammar in accounting for English agreement phenomena. In particular, once we allow morphology to tightly interact with the system of syntax, semantics, or even pragmatics, we could provide a solution to some puzzling English agreement phenomena. This allows a more principled theory of English agreement.

1 Introduction

Agreement, generally referring to a systematic covariance between two separate elements such as noun and verb, can be found in many languages. As noted by Corbett (1994), the

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agreement rule can be commonly represented in the form of 'X agrees with Y in Z'. For example, the statement in (1) could be an English agreement rule:

(1) The predicate verb (agreement target) agrees with the subject (agreement controller) in the agreement features (number and person).

English obeys such a simple agreement rule in general, but issues arise when the agreement features expressed by the morphology of the agreement source (e.g. subject) do not match those in the agreement target (e.g. verb). Examples like (2) contradict the rule in (1).

(2) a. This government have broken their/*its promises.
b. Five miles is a long distance to walk.

Here in (2)a the subject is in the singular, yet the verb is plural. (2)b is the opposite: the subject is plural whereas the verb is singular. In addition, we can observe that the number value on the determiner *this* and *five* in both cases mismatches the value on the verb. Another complication arises from the agreement between the pronoun *their* and its antecedent in (2)a: the antecedent of the semantically plural pronoun is the morphologically singular subject *this government*.

There exist two main types of account for English agreement set forth so far: 'derivational' and 'constraint-based' approaches (cf. Pollard and Sag 1994: P&S-94). The derivational view (see Belletti 2001 and the references cited herein) accepts a directional process that either copies, or moves bundles of agreement features from the agreement controller onto the target. More specifically, within the framework of Principles and Parameters or Minimalism, subject-verb agreement comes out as the result of two operations as represented in (3): the agreement relation between the subject in Spec of Agr_sP and the Agr_s head, and then the realization of the features of Agr_s on the verb. This realization results either from incorporation of V into Agr_s in syntax or directly in lexicon with the features for a morphological checking process.

(3) $\mathrm{Agr}_s\mathrm{P}$

NP $\mathrm{Agr}_s{}'$

Agr_s ....

.. VP

V ...

Meanwhile, in the constraint-based view (such as that of P&S-94), the two elements in an agreement relation specify partial information about a single linguistic object. Consider the tree representation in (4):[1]

(4) S

$$\boxed{1}\mathrm{NP}\begin{bmatrix}\mathrm{PER}\ \textit{3rd}\\ \mathrm{NUM}\ \textit{sing}\end{bmatrix}$$

VP

A boy

V

$$\begin{bmatrix}\mathrm{SUBJECT}\left\langle \boxed{1}\mathrm{NP}\begin{bmatrix}\mathrm{PER}\ \textit{3rd}\\ \mathrm{NUM}\ \textit{sing}\end{bmatrix}\right\rangle\end{bmatrix}$$

swims

[1]The feature system we adopt here is that of HPSG (Head-driven Phrase Structure Grammar, Pollard and Sag 1994, Sag and Wasow 1999). The abbreviations of the HPSG's feature system this paper uses are as follows: PER: person, NUM: number, GEN: gender, VFORM: verb inflection form, RELN: relation, SUBJ: subject, RESTR: restriction, CONT: content, ARG-ST: argument-structure, AGR: agreement, SPR: specifier.

The system in (4) requires that the agreement feature on the controller subject be compatible with the feature of the subject that the verb selects. Agreement is thus just nothing more than a system of constraints requiring token identities on the subject. In such a constraint-based view, there is no directional process between agreement source and target.

The common denominator of these derivational and constraint-based approaches is the view that English agreement is relevant to only one component of the grammar, e.g., either syntax, or semantics, or pragmatics.[2] This paper argues that contrary to such autonomous approaches, interrelationships among different grammatical components play crucial roles in English agreement (cf. Kathol 1999, Hudson 1999). This paper aims to provide a constraint-based analysis for such mismatch cases where a noun requires one set of agreement features on the determiner whereas the NP headed by this noun triggers a different set of agreement features on verbs or coreferential pronouns (cf. Kathol 1999, Wechsler and Zlatić 2000). In particular, we propose that English determiner-noun agreement is morphosyntactic agreement whereas both subject-verb and pronoun-antecedent agreement are reflections of index agreement, which is relevant to semantics (cf. P&S-94).

2 Three Views of Agreement

2.1 Against the Purely Syntactic View

In a purely syntactic view, phrases inherit agreement information from their lexical heads just as they inherit information about case or verb form. However, it is not difficult to find cases where such a conventional wisdom runs into a problem. For example, consider the examples in (5).

(5) a. [The hash **browns** at table nine] are/*is getting cold.

b. [The hash **browns** at table nine] is/*are getting angry. (Nunberg 1995)

When (5)b is spoken by a waiter to another waiter, the subject is referred to a person who ordered the hash browns. A similar case is found in (6):

[2]The analysis of P&S-94 is solely based on semantics, the anchoring conditions of the subject's index value. In this analysis, syntax plays little role. See Chap 2 of P&S-94 for further details.

(6) King prawns cooked in chili salt and pepper was very much better, a simple dish succulently executed. (Biber et al. 1999: 187)

Here the verb form is singular to agree with the dish being referred to, rather than with the individual prawns in the subject position. If we simply assume that the subject phrase inherits the morphosyntactic agreement features of the head noun *(hash) browns* in (5)b and *(King) prawns* in (6) and require that these features match those of the verb, we would not predict the singular verb form in these examples.

Examples with singular plural subject also show a conflict between the morphosyntactic agreement features of the subject NP and those that the singular verb normally demands for its subject.

(7) a. Cherry cokes is the most popular drink here. (Reid 1991:194)

b. The professional ethics arises from the requirement that analysis be unbiased. (Biber et al. 1999)

In the examples (7), the subjects are morphologically plural whereas the verb is singular.[3]

Another apparent exception to the syntactic rule is found with collective nouns. Examples in (8) display a mismatch of the morphosyntactic agreement features between the target and the source.

(8) a. The government are planning new tax increases.

b. The faculty are all agreed on this point.

When morphologically singular collective nouns such as *government* and *faculty* denote individual members of the group, they could be conceptualized as a plurality, thus agree

[3]One could suggest that *-s* in *ethics* is not a plural marker. However, as noted in Huddleston and Pullum (2002: 346), such a noun can have a related singular noun without the *-s*:

(i) a. An ethic of a particular [is] an idea or moral belief that influences the behavior and philosophy of a group of people.

b. The basic ethics which any religion sets forward [are] more or less the same as those of any other religion.

with a plural verb. This agreement pattern could not be predicted if we simply rely on the morphosyntatic agreement features.

Agreement in coordination appears to provide a further impediment to a syntactic view. Consider the examples in (9):

(9) a. John and only John is allowed in here. (Corbett 1994: 58)

b. This bomber and its cargo probably weighs over a hundred tons. (Biber et al. 1999: 180)

The conjoined NP in (9)a and (9)b has a single referent in terms of semantics, so the verb is in the singular form. In a semantic view, this is simply so because the subject refers not only to a group but also to individuals.

2.2 Against a Purely Semantic View

The examples we have seen in section 2.1 may support a semantic based view of agreement. That is, based on such data, one could argue that agreement is determined by the properties of a nominal referent rather than by the formal or morphological properties of the nominal itself (cf. Dowty and Jacobson 1988). Though a semantic view gets strong support from such cases, it is also not free from problems because of the existence of obvious cases where we need to make an appeal to syntactic factors too. One simple case can be found from examples like (10) (Nunberg 1995):

(10) a. I am parked on the hill.

b. You need a help from the one that can do this job.

The intended referent of the subject *I* in (10) is clearly a car, a third singular individual in terms of semantics, yet the verb isn't in the third person verb form: it is simply in the first singular form (see section 3.2.5 for further discussion). Similarly, the verb form in (10)b that goes with the pronoun *you* always has to be plural despite the fact that the subject can refer to a singular individual as well as discrete individuals.[4] Such examples indicate that morpho-syntactic factors also play a role in English subject-verb agreement.

[4] As an anonymous reviewer points outs, the agreement in such cases has to do with the properties of the pronoun *you*. This is in fact what this paper argues for. See section 3.2.5.

Further issues arise with pronoun-antecedent agreement. In the semantic view, the noun *family* would denote either an aggregate entity or a nonaggregate entity and thus can combine with either a singular or a plural verb as illustrated in (11) (cf. Pollard and Sag 1994).

(11) a. His family are/*is all overweight.
b. His family is/*are moving to Seoul.

This view would then possibly predict cases like (12) where the speaker changed the individuation mode of the collective noun *Senate*.

(12) **The Senate** just voted **itself** another raise. Most of **them** were already overpaid to begin with. (P&S-94: 72)

Nothing will block the referent of *the Senate* from being changed from singular to plural entities. As noted in P&S-94: 72–73, however, such a change is subject to syntactic conditions. As illustrated in (13), we can observe that once the mode of individuation is decided, it is immutable within the intrasentential domain.[5]

(13) a. That dog is so ferocious, and **it** even tried to bite **itself**.
b. That dog is so ferocious, and **he** even tried to bite **himself**.
c. *That dog is so ferocious, and **it** even tried to bite **himself**.
d. *That dog is so ferocious, and **he** even tried to bite **itself**. (P&S-94)

The reflexive noun in (13) has to agree in gender with the matrix subject, the controller of the VP. This implies that we cannot simply resort to the denotational possibilities when syntactic constraints (such as the Binding Principle) determine the antecedent for the agreeing element. English agreement needs to make an appeal to syntax also when necessary.

[5]The intrasentential domain appears to be clause-bound when considering examples like *The Senate just voted itself another raise when most of them were already overpaid.* In the main clause, the Senate is individuated as a singular individual (*itself*) whereas it is individuated as plural individuals (*them*).

2.3 A Purely Index Agreement Approach

2.3.1 How this works

In solving the problems within the syntactic view and the semantic view, P&S-94 provides an appealing analysis of index agreement. Index agreement involves sharing of referential indices, closely related to the semantics of a nominal as represented in (14).

(14)
$$\left[\begin{array}{l}\langle \text{boy} \rangle \\ \text{CONTENT} \left[\begin{array}{l}\text{INDEX } \boxed{1} \left[\begin{array}{l}\text{PER } \textit{3rd} \\ \text{NUM } \textit{sing} \\ \text{GEN } \textit{masc}\end{array}\right]\end{array}\right]\end{array}\right]$$

In the interpretation of a nominal, the index must be anchored to an individual in the context of utterance, to make sure of its proper usage in the real world. The index of *boy* in (14) thus must be anchored to an individual with the properties of singular masculine.

Meanwhile, a verb lexically specifies information about the index value of the subject it selects, as represented in (15).[6]

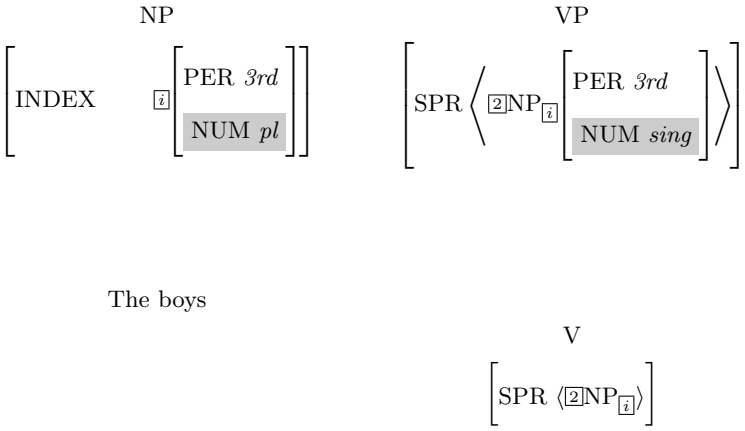
(15)
$$\left[\begin{array}{l}\langle \text{swims} \rangle \\ \text{HEAD} \left[\begin{array}{l}\textit{verb} \\ \text{VFORM } \textit{fin}\end{array}\right] \\ \text{SPR} \left\langle \text{NP}[\textit{nom}] \boxed{1} \right\rangle \\ \text{CONTENT} \left[\begin{array}{l}\text{RELN } \textit{swim} \\ \text{SWIMMER } \boxed{1} \left[\begin{array}{l}\text{PER } \textit{3rd} \\ \text{NUM } \textit{sing}\end{array}\right]\end{array}\right]\end{array}\right]$$

In this system, subject-verb agreement is the structure-sharing between the index values of the subject and those of the NP that the verb selects. The verb *swims* in (15) selects a subject with the index value of 3rd singular. Thus, if this verb combined with a subject

[6]The feature SPR here embraces both subject and specifier. See Sag and Wasow (1999).

with the incompatible index value, we would generate an ungrammatical example like *The boys swims*, as illustrated in (16):

(16) *S



Such an index agreement analysis could account for the problematic cases within a purely syntactic or semantic analysis. For example, in cases with reference transfer repeated in (17), the relevant NP will introduce the transferred referent by anchoring conditions.

(17) a. The hash **browns** at table nine are/*is getting cold.

b. The hash **browns** at table nine is/*are getting angry.

Unlike the situation in (17)a, the referent of *hash browns* in (17)b has been transferred from vegetables to one restaurant customer who ordered them. This will allow the subject NP to be anchored to a third singular individual, as represented in (18).

(18)
$$\left[\begin{array}{l}\langle \text{hash browns} \rangle \\ \text{CONTENT} \left[\begin{array}{l}\text{INDEX } \boxed{1} \left[\begin{array}{l}\text{PER } \textit{3rd} \\ \text{NUM } \textit{sing}\end{array}\right] \\ \text{RESTR} \left\langle \left[\begin{array}{l}\text{RELN } \quad \textit{restaurant-customer} \\ \text{INSTANCE } \quad \boxed{1} \left[\begin{array}{l}\text{PER } \textit{3rd} \\ \text{NUM } \textit{sing}\end{array}\right]\end{array}\right], \ldots \right\rangle\end{array}\right]\end{array}\right]$$

In the same manner, we could account for the singular plurals cases in (19).

(19) Eggs is my favorite breakfast.

The index value of the noun *eggs* here is anchored to an entity that bears the singular number value. The singular verb *is* that selects 3rd singular subject can thus combine with the singular plural subject.

Collective nouns can refer to either the group as a whole or individual members of the group, depending on context, as in (20).

(20) a. The family has suffered the anguish of repossession.

b. The family are absolutely devastated. They are coping as well as possible. (Biber et al. 1999)

The index value that the noun *family* in (20)a and (20)b anchors to can be represented as the ones in (21):

(21) a. *family* in (20)a:

$$\left[\text{CONT}\left[\text{INDEX } \boxed{1}\left[\begin{array}{l}\text{PER } \textit{3rd} \\ \text{NUM } \textit{sing}\end{array}\right]\right]\right]$$

b. *family* in (20)b

$$\left[\text{CONT}\left[\text{INDEX } \boxed{1}\left[\begin{array}{l}\text{PER } \textit{3rd} \\ \text{NUM } \textit{pl}\end{array}\right]\right]\right]$$

The analysis can also explain the matching condition on the agreement features between the verb and a reflexive pronoun as given in (22).

(22) a. The faculty is voting itself/*themselves a raise.

b. The faculty are voting *itself/themselves a raise.

What we observe in (22) is that the number value of the anaphor matches that of the verb. The matching condition between the index value of the subject and the anaphor is conditioned by the Binding Principle stating that a reflexive pronoun must be bound by a preceding argument of the same verb.[7] (23) is the argument structure of the verb *vote*.

(23) $\begin{bmatrix} \langle \text{vote} \rangle \\ \text{ARG-ST } \langle \text{NP}_i, \text{NP}[ana]_{i/*j}, \text{NP} \rangle \end{bmatrix}$

The coindexation indicates that the two NPs denote the same entity, and thus they exhibit a form of agreement with the same values for PERSON, NUMBER, and GENDER (cf. Sag and Wasow 1999: 152).

2.3.2 Problems

Attractive as it may seem, such an index agreement approach suffers from problems in examples like (24) (Data from Hudson 1999 and Reid 1991).[8]

(24) a. [Five pounds] is/*are a lot of money.
b. [Two drops] deodorizes/*deodorize anything in your house.
c. [Fifteen dollars] in a week is/*are not much.
d. [Fifteen years] represents/*represent a long period of his life.
e. [Two miles] is/*are as far as they can walk.

In all these measure noun examples, the plural subject combines with a singular verb. An apparent conflict arises from the agreement features of the head noun. For the proper agreement with the numeral, the head noun has to be plural, but for subject-verb agreement the noun has to be singular.[9]

[7] This could be reformulated as 'a reflexive pronoun in the argument-structure must be outranked by a coindexed element', where 'outrank' is defined such as 'if there is an ARG-ST list on which A precedes B, then A outranks B.' See Sag and Wasow (1999: 157).

[8] As noted by an anonymous reviewer, the * variants in (24) could be acceptable when we have clear contexts where the subject is conceived as discrete entities. See section 3.2.1 for discussion of such cases.

[9] An anonymous reviewer points out, a question remains of the categorial status of numerals. Numerals have both open-class and closed-class characteristics and can be taken to be determinatives as noted in Huddleston and Pullum (2002: 236). They can also have different functions besides that of determiner:

We cannot simply reclassify nouns such as *pounds, drops, dollars, years, miles*, etc, as singular, since this would then result in the mismatch with the determiner. There is no doubt that such nouns select for plural determiners since we cannot have phrases like **a pounds*, **this years*, or **one dollars.*

A similar conflict is also found in cases with social organization collective words like (25) and (26):

(25) a. [This/*these government] has/*have broken its promises.

b. [This/*these government] have/*has broken their promises.

(26) a. [This/*these England team] have/*has put themselves in a good position to win the championship.

b. [This/*these England team] *have/has put itself in a good position to win the championship. (Radford 1988)

(i) a. Five is an odd number.

b. We are three in number.

c. I have taken lots of books but three of them were novels.

For example, the numeral *five* in (i)a behaves like a pronoun, whereas the one in (i)b functions as a predicative complement, and the one in (i)c behaves as a partitive. In addition, numerals can behave as a determiner or an adjectival element as in (ii)a and (ii)b:

(ii) a. Three rings were stolen.

b. The three students just arrived.

Treating the numeral *three* in (ii)a as a determiner can get support from the fact that English has no adjective-head agreement. Another argument supporting this position comes from the fact that the presence of a numeral obviates the need for a determiner (Huddleston and Pullum (2002: 539)):

(iii) a. I bought one/neither book.

b. *I bought good book.

When a true determiner precedes a numeral as in (ii)b, the numeral would then become just a modifier. In such cases, the preferred form of the verb is plural, rather than singular, as pointed out by a reviewer:

(iv) These five dollars are/??is a lot.

We conjecture that this is partly due to the fact that the determiner *these* rather fixes the index value of the subject to be plural. See section 3.1 and 3.2 for similar mismatch cases.

The head noun has to be singular so that it can combine with a singular determiner. But the conflicting fact is that the singular noun phrase can combine even with a plural verb as well as a singular verb. Since the only possible number value of the determiner is singular for the head noun, the head noun cannot be anchored to plural entities unless we allow the mode of individuation to be changeable even within the same sentence domain.

3 Proposal: A Hybrid Analysis

3.1 Basic Idea

To solve such a mismatch, we claim that English determiner-noun agreement is simply a reflection of morphosyntactic agreement features between determiner and noun, whereas both subject-verb agreement and pronoun-antecedent agreement are index-based agreement as represented in (27).[10]

(27) Morpho-syntactic agreement (AGR)

Det head-noun verb ...

Index agreement (INDEX)

To be more precise, adopting the idea of Kathol's (1999) and Wechsler and Zlatić's (2000), we assume that a noun has two distinct features relevant to agreement: AGR and INDEX. The feature AGR is morpho-syntactic feature specifications encoded both on the source (noun) and on the target (verb) under the HEAD feature whereas the INDEX is semantic-based features on nominals.[11]

[10] As an anonymous reviewer points out, in the present analysis there is no direction between the agreement controller and the target. All that is required is the feature compatibility between the two.

[11] An anonymous reviewer questioned how the present analysis would deal with agreement-like properties in relative clauses:

(i) a. #the boat who I like

b. the boat which I like

As for determiner-noun agreement in English, the only relevant information would thus be morphosyntactic NUMBER value as shown in (28).

(28) a. every man/*every men

b. *all man/all men

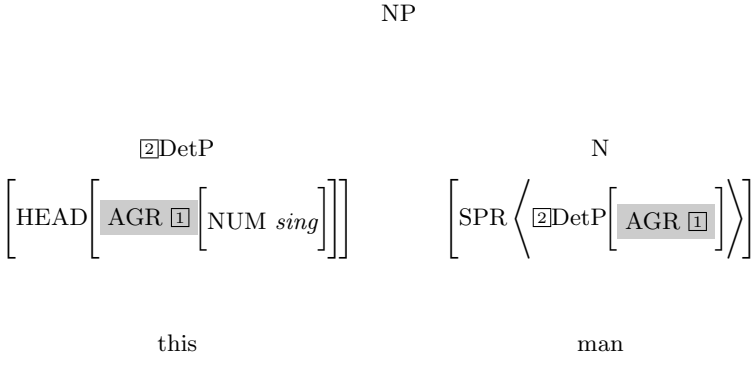
c. this boy/*these boy

The matching conditions of the agreement features on the determiner and the head are enforced by the lexical selection of the head noun (cf. Sag and Wasow (2000)). For example, the noun *man* will have the lexical information given in (29).

(29)
$$\begin{bmatrix} \langle \text{man} \rangle \\ \text{HEAD} \begin{bmatrix} \textit{noun} \\ \text{AGR } \boxed{1}\begin{bmatrix}\text{NUM } \textit{sing}\end{bmatrix} \end{bmatrix} \\ \text{SPR } \langle \text{DetP}[\text{AGR } \boxed{1}] \rangle \end{bmatrix}$$

As in (30), the noun *man* is morphologically singular and selects a determiner phrase whose morphological agreement information is compatible with its own AGR value. This lexical entry will then allow us to generate a structure like (30).

(30)

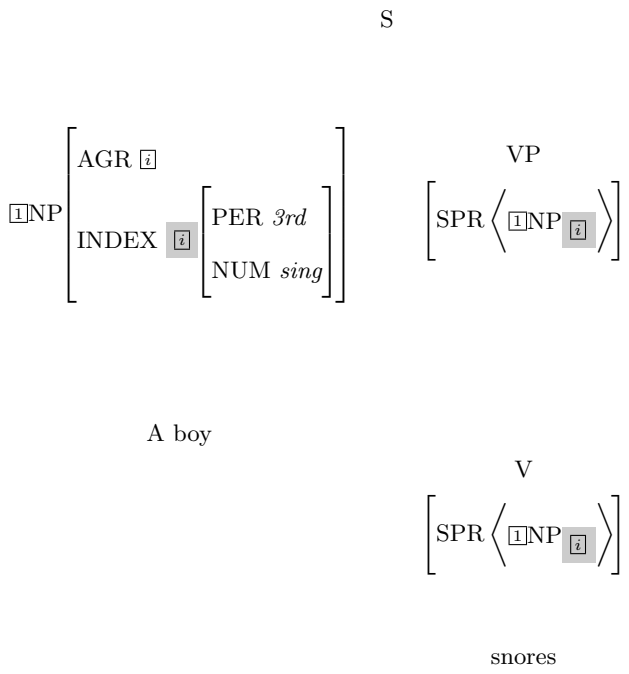


We take this to be also a type of pronoun-antecedent agreement. That is, we accept the view that the agreement between the relative pronoun and its antecedent is taken to be index-based, rather than morphosyntactic. The oddness of (i)a arises from the incompatibility of two properties, being a boat and being human (*who*), which an entity would have to have in order to serve as an anchor for the NP's index. Corbett (1979), with an agreement hierarchy, also provides a similar claim that relative pronouns are more likely to take semantic agreement (index agreement in our context). See Barlow (1988) also.

Though a singular determiner such as *a* and *this* is lexically specified with a singular NUMBER value, determiners such as *the*, *his* and *no* have no specification on the value. This will allow expressions like *the boy* or *the boys*, *his book* or *his books*.

Unlike determiner-head noun agreement, as discussed in section 2.3.1, subject-verb agreement is based on the semantic features of the nominal, INDEX, rather than on the morphosyntactic features, AGR. As represented in (31), the agreement target, verb, contains the information that covaries with the information specified on the selected category (subject), which is the index value of the agreement source, subject:

(31)



As represented in (31), the only requirement on subject-verb agreement is the identity on the index value, unlike determiner noun agreement. As such, in canonical cases the morphosyntactic AGR and the INDEX value of the subject are identical:

(32) a. This dog is/*are dangerous.

b. These dogs are/*is dangerous.

However, nothing blocks mismatches between the two (AGR and INDEX) as long as all the other constraints are compatible. As noted earlier, there are various cases showing the

mismatch between verb and subject. Consider cases with measure nouns repeated here in (33).

(33) a. [Five pounds] is/*are a lot of money.

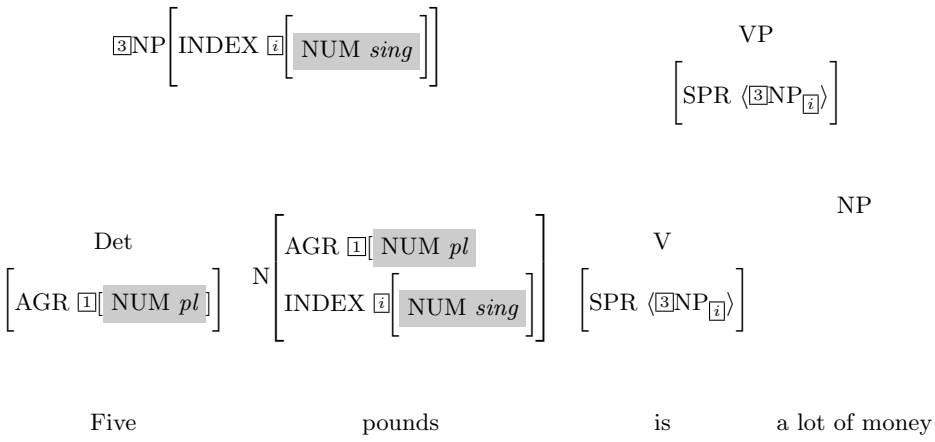
b. [Two drops] deodorizes/*deodorize anything in your house.

The nouns *pounds* and *drops* here are morphologically plural and thus can select a plural determiner as argued so far. But when these nouns are anchored to the group as a whole – that is, conceptualized as referring to a single measure, its index value has to be singular, as represented in (34).

(34)
$$\begin{bmatrix} \langle \text{pounds} \rangle \\ \text{HEAD} \begin{bmatrix} \textit{noun} \\ \text{AGR } \boxed{1} \begin{bmatrix} \text{NUM } \textit{pl} \end{bmatrix} \end{bmatrix} \\ \text{SPR} \left\langle \text{DetP} \begin{bmatrix} \text{AGR } \boxed{1} \end{bmatrix} \right\rangle \\ \text{CONT} \mid \text{INDEX} \begin{bmatrix} \text{NUM } \textit{sing} \end{bmatrix} \end{bmatrix}$$

As indicated in the lexical entry, the morphosyntactic number value of *pounds* is plural whereas its actual index value is singular. In the present analysis, this would mean that that *pounds* will combine with a plural determiner but with a singular verb. This is possible, as noted earlier in section 2, since the index value is anchored to a singular individual in the context of utterance. The present analysis thus generates the following structure for the sentence (33)a:

(35)



Since in the present analysis, the determiner-head agreement is morpho-syntactic agreement, it only refers to AGR feature value in which the number value is plural. However, the subject and verb agreement is index agreement, what we need is the identity of the index value between the verb and the head of the subject as shown by the shaded part. By teasing out the role of agreement into two different dimensions, the analysis thus provides a simple account of mismatch cases in agreement.

3.2 Consequences

3.2.1 Case I

Among various welcome results of the present analysis, the first one centers on the variation of the verb type depending on the context.

(36) a. Five boys count the money.

b. Five boys counts as one team. (Reid 1991: 331)

The head noun has a morphologically plural AGR value but could either be anchored to multiple boys conceived as discrete entities or a group of five boys as a whole. This in turn means that *boys* in (36)a will refer to discrete entities as represented in (37)a, whereas in (36)b the noun denotes a group as shown in (37)b:

(37)

a.
$$\begin{bmatrix} \langle \text{boys} \rangle \\ \text{HEAD} \begin{bmatrix} \textit{noun} \\ \text{AGR } \boxed{1} \begin{bmatrix} \text{NUM } \textit{pl} \end{bmatrix} \end{bmatrix} \\ \text{SPR} \left\langle \text{DetP} \begin{bmatrix} \text{AGR } \boxed{1} \end{bmatrix} \right\rangle \\ \text{CONT} \mid \text{INDEX} \begin{bmatrix} \text{NUM } \textit{pl} \end{bmatrix} \end{bmatrix}$$

b.
$$\begin{bmatrix} \langle \text{boys} \rangle \\ \text{HEAD} \begin{bmatrix} \textit{noun} \\ \text{AGR } \boxed{1} \begin{bmatrix} \text{NUM } \textit{pl} \end{bmatrix} \end{bmatrix} \\ \text{SPR} \left\langle \text{DetP} \begin{bmatrix} \text{AGR } \boxed{1} \end{bmatrix} \right\rangle \\ \text{CONT} \mid \text{INDEX} \begin{bmatrix} \text{NUM } \textit{sing} \end{bmatrix} \end{bmatrix}$$

Even if the morphosyntactic agreement value of *boys* is plural, thus combining with the plural numeral *five*, it can refer to an aggregated group (see also Barlow 1988).

3.2.2 Case II

The present analysis also could account for the mismatch in collective nouns one of whose examples is repeated in (38).

(38) a. [This government] dislike(s) change.

b. *These government dislike(s) change.

(39) a. This committee has/have decided.

b. *These committee sat late.

(38)b is immediately ruled out because of the number mismatch between *these* and *government*. In (38)a, the verb can be either singular or plural. This is possible since the index value of the subject can be anchored either to a singular or to plural entities. More precisely, we could represent the relevant information of the expressions participating in these agreement relationships as in (40).

(40) a.
$$\begin{bmatrix} \langle \text{this} \rangle \\ \text{HEAD} \begin{bmatrix} \textit{det} \\ \text{AGR} \begin{bmatrix} \text{NUM} \quad \textit{sing} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

b. $$\left[\begin{array}{l}\langle\text{government}\rangle \\ \text{HEAD}\left[\begin{array}{l}\textit{noun} \\ \text{AGR}\left[\text{NUM}\quad \textit{sing}\right]\end{array}\right] \\ \text{CONT}\,|\,\text{INDEX}\ \boxed{1}\left[\text{NUM}\quad \textit{pl}\right]\end{array}\right]$$

c. $$\left[\begin{array}{l}\langle\text{dislike}\rangle \\ \text{HEAD}\left[\begin{array}{l}\textit{verb} \\ \text{AGR}\left[\text{NUM}\quad \textit{pl}\right]\end{array}\right] \\ \text{VAL}\,|\,\text{SPR}\left\langle \text{NP}\left[\text{INDEX}\ \boxed{1}\left[\text{NUM}\quad \textit{pl}\right]\right]\right\rangle\end{array}\right]$$

As represented in (40)a and (40)b, *this* and *government* agree each other in terms of the morphosyntactic agreement number value whereas the index value of *government* is token-identical with that of the subject that the verb *dislike* in (40)c select. This is how the present analysis allows the plural verb form.

3.2.3 Case III

Related to the above case, the present analysis also provides a proper treatment of pronoun-antecedent agreement which is also index-based, rather than morpho-syntax-based.

(41) a. [This England team] [has] put [itself/*themselves] in a good position to win the championship.

b. [This England team] [have] put [themselves/*itself] in a good position to win the championship.

The point here is that the number value of the verb matches that of the anaphor. What this tells us is that once the index value is determined, it cannot be changed in the same intrasentential domain.

In accordance with the Binding Principle of HPSG, the reflexive has to be bound by a preceding argument of the same verb in the argument structure. This in turn means that the binder and the reflexive are coindexed as in (42):

(42) $\begin{bmatrix} \langle \text{put} \rangle \\ \text{ARG-ST } \langle \text{NP}_i, \text{NP}[ana]_{i/*j}, \text{PP} \rangle \end{bmatrix}$

In (41)a the head noun *team* has to have a singular index value for subject agreement since the verb is singular. This requires any reflexive noun in the same argument structure to have the singular index value too. Meanwhile in (41)b, the verb is plural, implying that the subject is anchored to individuals of the group. This mode of individuation cannot be changed, thus requiring a 3rd person plural reflexive pronoun.

3.2.4 Case IV

Another immediate consequence of this analysis is that it solves the contrast between *faculty*-type collective nouns (e.g. *staff, clergy, nobility, peasantry, aristocracy, etc*) and *family*-type collective nouns (e.g. *committee, government*) in a straightforward manner. The clear difference between the these types is signalled by the contrast between (43)b and (44)b (data from P&S-94):

(43) a. Every faculty meets/*meet on a monthly basis.
b. All faculty *is/are required to submit midterm grades.
c. All faculties *meets/meet on a monthly basis.

(44) a. Every family gets/*get together for the holidays.
b. All family *is/*are asked to bring a dessert or a salad.
c. All families are asked to bring a dessert or a salad.

As pointed out in P&S-94, one could argue that *faculty*-type nouns can be anchored to either to a singular index or plural indices, whereas *family*-type nouns denote entities that are individuated as nonaggregate. This would account for the contrast. However, an issue arises from examples like (45), which the P&S-94 analysis left unresolved.

(45) John's family are/*is destroying themselves.

P&S-94 hints that *John's family* might be transferred from a nonaggregate to the aggregate entity. But then a question arises why we couldn't apply the identical reference transfer for *all family*, allowing examples like (44)b.

But notice that our hybrid analysis provides a straightforward solution. In terms of the morphosyntactic AGR feature, [*every faculty*] and [*all faculty*] are both acceptable since the noun [*faculty*] can have either plural or singular morphosyntactic number AGR feature. But the situation is different in *family*: this noun can bear only the singular morphosyntactic AGR feature. The expression *[*all family*] is thus simply unacceptable because of the mismatch in the morphosyntactic number value of the AGR between *all* and *family*. Examples like (45) are acceptable since there is no mismatch in the morphosyntactic AGR value between *John's* and *family*: *John's family* has a plural index value and thus combines with the plural verb.

3.2.5 Case V

This analysis raises questions for examples like (10), repeated here in (46). In such so-called *predicate transfer* examples, subject-verb agreement is solely based on the morphosyntactic agreement features, as can be seen from the ungrammaticality of (46)b:

(46) a. I am parked on the hill.
b. *I is parked on the hill.

No semantic factors work here. The present hybrid analysis, in which a lexical head selects the syntactic as well as semantic information of its complement(s) (cf. Sag and Wasow 1999), could provide a solution here. Pronouns are peculiar in that when a verb selects a pronoun as its subject, the verb's morphosyntactic AGR value should agree with the subject's morphosyntactic AGR value as in (47) (cf. Hudson 1999):

(47) a. He/*I is in the room.
b. I/*he/*she am in the room.

The peculiar agreement behavior of copula verbs can be represented schematically as in (48):

(48)

	Present Tense	Past Tense
copula verbs:	I am	I/he/she/it was
	you/we/they are	you/we/they were
	he/she/it is	
main verbs:	I/you/we/they snore	I/you/we/they/he/she/it snored
	he/she/it snores	

As for the copula verbs, English has three different present tense forms. Meanwhile, present tense main verbs have only two distinct forms: one form when their subjects are third-person singular and another form covering all other persons and numbers. A clear distinction between copula and main verbs is in the past tense form: though there is only one form for regular main verbs, copula has two different forms.

From these idiosyncratic properties of copula verbs, we can assume that when a copula verb selects a pronoun as its subject, it places a strict morpho-syntactic value on its pronoun subject, but nothing on the subject's INDEX value (cf. Hudson 1999). For example, the copula verb *is* requires its subject pronoun to be a third singular, not a first person. This difference can be represented as in (49)a and (49)b:

(49)

a.
$$\begin{bmatrix} \langle \text{am} \rangle \\ \text{HEAD} \begin{bmatrix} \textit{verb} \\ \text{AGR } \boxed{1} \begin{bmatrix} \text{PER } \textit{1st} \\ \text{NUM } \textit{sing} \end{bmatrix} \end{bmatrix} \\ \text{SPR} \left\langle \begin{bmatrix} \textit{pronoun} \\ \text{AGR } \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix}$$

b.
$$\begin{bmatrix} \langle \text{snores} \rangle \\ \text{HEAD} \begin{bmatrix} \textit{verb} \\ \text{AGR } \boxed{1} \begin{bmatrix} \text{PER } \textit{3rd} \\ \text{NUM } \textit{sing} \end{bmatrix} \end{bmatrix} \\ \text{SPR} \left\langle \begin{bmatrix} \text{INDEX } \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix}$$

Since the subject's INDEX value is underspecified for the copula verb, nothing blocks it from being anchored to a 3rd person singular entity, a car. The situation is different for a main verb: the index value of its subject needs to be a third singular. Such examples indicate that morpho-syntactic agreement can play an important role even in subject-verb agreement.

3.2.6 Case VI

As an anonymous reviewer points out, a question arises of how the present analysis, in which the anchoring information of an index value plays a crucial role in subject-verb agreement, can deal with cases like the following:

(50) a. He has a pair of slacks/scissors/glasses/jeans.

b. He has *two slacks/?two scissors/two glasses.

c. These scissors need/*needs sharpening.

The nouns such as *scissors* denote a single object made up of two like parts. If this is the case, the verb should be not plural but singular, in contrast to (50)c. A solution comes from Reid's (1991) observation that nouns like *scissors* are in fact conceptually plural because of the two blades. If this is on the right track, we then could assign following lexical information to *scissors*:

(51)
$$\begin{bmatrix} \langle \text{scissors} \rangle \\ \text{HEAD} \begin{bmatrix} \textit{noun} \\ \text{AGR} \ [\text{NUM} \quad \textit{pl}] \end{bmatrix} \\ \text{CONT} \,|\, \text{INDEX} \ [\ \text{NUM} \quad \textit{pl}\ ] \end{bmatrix}$$

Interestingly, as noted in Huddleston and Pullum (2002: 342), there is a restricted use of such nouns as singulars:

(52) a. This scissor reportedly never needs/*need sharpening.

b. Have you ever wondered why someone can't design a flannel-lined jean?

In such advertisement or non-fictional usage, the reference is to types, not individual specimens.

3.2.7 Case VII

Another complication arises from cases like *oats* and *wheat*, which require the same index but different agreement patterns with the verb, as pointed out by a reviewer. Consider:

(53) a. Oats are a cereal crop or its grains, used for making biscuits or a food called porridge.

b. Wheat is good for your health. (from Collins Cobuild Dictionary, 2001)

As noted by Reid (1991) and many others, the word *oats* is peculiar in that unlike ordinary plurals it has no singular counterpart since the individual particles denoted by such nouns are themselves of no significance. This explains why it cannot occur with numerals as in **an oat* and **two oats*. Meanwhile, *wheat* is a non-count noun denoting the substance. Unlike *oats*, it has no plural counterpart and always takes a singular verb. A corpus example further contrasts these two:

(54) In fact, if you fill a feeder with a standard mix – a blend of sunflower and other seeds such as millet, oats, wheat, flax, and buckwheat – you'll see many birds kicking out the small seeds to get to the prize. (from Collins Cobuild Dictionary, 2001)

As observed and noted by Huddleston and Pullum (2002) and others, though in English the distinction between count and non-count noun appears to play an important role, the ways in which particular entities are conceptualised and lexicalised varies considerably. Like nouns such as *sand, dust, grass*, and *wheat* that often refer to more-or-less small entities, the conceptualization is likely to focus on the substance, denoting a massed aggregate, as represented in (55):[12]

[12]The feature COUNT is introduced for cases like (i) (Sag and Wasow 1999):

(i) a. Much furniture was broken.

b. *A furniture was broken.

c. *Much chair was broken.

d. A chair was broken.

Determiners like *a* and *few* will be lexically specified as [COUNT +] and others like *much* will be treated as [COUNT −]. In this system, the SPR value of a count noun like *chair* would be <Det[COUNT +]>, blocking cases like **some chair*. However, *furniture* or *oats* will have <Det[COUNT −]> as its SPR value, allowing cases like *some furniture, some oats*, but not **many furniture* or **many oats*.

(55)
$$\begin{bmatrix} \langle \text{wheat} \rangle \\ \text{HEAD} \begin{bmatrix} \textit{noun} \\ \text{AGR} \begin{bmatrix} \text{COUNT} \quad - \end{bmatrix} \end{bmatrix} \\ \text{CONT} \mid \text{INDEX} \boxed{1} \begin{bmatrix} \text{NUM} \quad \textit{sing} \end{bmatrix} \end{bmatrix}$$

It is thus lexically specified that *wheat* is uncountable and refers to a singular messed group. However, *oats* is idiosyncratic in that its plural form does not force the interpretation of a countable noun. This lexicalized information can simply be noted in its lexical information as in (56):

(56)
$$\begin{bmatrix} \langle \text{oats} \rangle \\ \text{HEAD} \begin{bmatrix} \textit{noun} \\ \text{AGR} \begin{bmatrix} \text{COUNT} \quad - \end{bmatrix} \end{bmatrix} \\ \text{SPR} \left\langle \text{DetP } [\text{COUNT } -] \right\rangle \\ \text{CONT} \mid \text{INDEX} \boxed{1} \begin{bmatrix} \text{NUM} \quad \textit{pl} \end{bmatrix} \end{bmatrix}$$

Even though the INDEX value is usually determined in context, cases like *oats* lexically specify its value to be plural.[13]

[13]One of the remaining issues in the present analysis, as an anonymous reviewer points out, concerns cases where the proximity principle plays a role:

(i) a. There is [a girl] and [two boys] in the room.

b. Among the Toads was [an alcoholic film actor called Richard Deane], [an international lawyer named Kips], [a tax advisor, Monsieur Belmont], and [an American woman with blue hair called Mrs Montgomery]. (Biber et al. 1999: 190)

We at this point conjecture that English also has a proximity rule; the verb agrees with the nearest subject noun. Though an issue remains the grammatical function of the postverbal NP constituent (cf. Bresnan 1994), the verb in (i) agrees with the first conjuct of the postverbal NP. An informal survey reveals that a majority of native speakers apply the proximity rule in cases like (i) as well as (ii):

(ii) a. There are/*is [two boys] and [a girl] in the room.

b. Among the Toads were/*was two film actors and one international lawyer.

4 Conclusion

In sum, I have claimed that English employs morphosyntactic agreement for determiner-head noun agreement and index agreement for subject-verb and antecedent-pronoun agreement. This approach, based upon a constraint-based grammar, allows agreement targets such as head noun and verb to contain the information that covaries with the information specified on the selected category. This way of agreement makes explicit what kinds of features are involved for each agreement pattern.

This paper shows that the interaction of different components of the grammar plays a crucial role in English agreement phenomena. In particular, once we allow morphology tightly to interact with the system of syntax and semantic knowledge, we can provide a solution to some puzzling English agreement phenomena. This results in a more principled theory of English agreement.

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Title: Hybrid Agreement in English

Author: Jong-Bok Kim

Affiliation: Kyung Hee University, Seoul

Address: School of English

Kyung Hee University

1 Hoegi-dong, Dongdaemoon-gu, Seoul, Korea 130-701

Email: jongbok@khu.ac.kr

Tel: 82-2-961-0892