Syntactic (dis)agreement is not semantic agreement

Gabi Danon

Bar Ilan University, Ramat-Gan

This chapter looks at two cases where subject agreement in Hebrew does not follow the morphosyntactic (phi) features of the subject: singular agreement with plural subjects, and plural agreement with singular group-denoting subjects. The paper argues that there are important differences between these two cases; in particular, it is argued that the former is not agreement but lack of agreement, whereas the latter involves (syntactic) agreement. Lack of agreement is tied to constraints on thematic role assignment. Neither case poses a real problem to current syntactic models of agreement.

1. Introduction

So-called 'semantic agreement' has been a problem to mainstream generative syntax for years. Mainstream models usually view agreement as a formal syntactic operation; alternatively, there have recently been arguments in favor of viewing agreement as a morphological/PF operation (Bobaljik 2008; Landau 2013). Both of these approaches predict that there should be no direct interaction between agreement and interpretation. Nevertheless, there are cases where it seems like the semantic content of a phrase affects the agreement that it triggers and gives rise to mismatches between the morphological *phi* features of a noun phrase and those of the predicate with which it presumably agrees.[1]

While relatively few formal accounts of such 'anomalous' agreement exist within derivational models of generative syntax, two major approaches to dealing with it can

---

The alternative of viewing agreement as a purely semantic operation has received much less support (but see Dowty & Jacobson 1988), and is to a large extent incompatible with most current work in syntax.

be identified. One approach is to simply dismiss this as a marginal and exceptional phenomenon found in only a few highly restricted domains or constructions. The other is to assume that lexical semantics may 'override' the morphological features of a noun as they enter into syntactic computation, thus giving rise to normal syntactic agreement based on semantically determined features. These two approaches make opposite predictions regarding the degree of productivity of this phenomenon. According to the first approach, 'semantic agreement' should be extremely restricted and construction-specific; according to the second approach, we might expect this semantic 'feature rewriting' operation to be quite productive if it is an active part of the grammar.

This paper argues that both of these approaches are mostly wrong, at least under the kind of simple and naïve implementation often implicitly assumed. At the same time, I argue that the two approaches actually do capture some aspect of the phenomenon correctly. One reason why two seemingly contradictory approaches might in fact not exclude each other is that 'semantic agreement' is not a uniform and homogeneous set of facts. In this paper I focus on two distinct cases: plural subjects that seem to trigger singular agreement, and singular subjects triggering plural agreement. I will argue that underlying these two cases, both of which have sometimes been seen as semantic agreement, are two mechanisms that differ from each other in some crucial ways.

A major aspect of understanding these phenomena is to identify the exact properties of the constructions at hand. A significant part of this paper is devoted to showing that descriptively, these two types of agreement mismatch have different distributional properties and are subject to different constraints. This forms the basis for the two analyses to be proposed, which are meant to capture in an explicit manner the observed facts and to show that neither of these two phenomena poses a real problem to modularity and to the hypothesis that agreement is a syntactic operation that semantics does not directly 'interfere' with. In particular, it is argued, following Danon (2012), that singular 'agreement' with plural subjects is not agreement at all (whether semantic or syntactic) but lack of agreement, whereas plural agreement with singular subjects is the result of regular syntactic agreement.

I will propose that lack of agreement entails that no thematic role can be assigned to the subject, and hence the distribution of non-agreeing subjects is limited to environments where a non-thematic subject is allowed. Plural agreement with singulars, on the other hand, will be argued to be the result of a lexical mismatch between two bundles of features, where the relevant nouns carry both singular and plural features at the same time. The analysis of both types of agreement mismatch depends crucially on adopting a model of nominal features that would allow us to distinguish between the features used for noun phrase internal concord and those used for external agreement; building upon previous work in Danon (2012, 2013), I will argue for a dual analysis based on the insights of Wechsler and Zlatić (2000, 2003).

2.   Two types of number mismatch

Agreement mismatches involving the number feature can go in two directions: a singular subject with a plural predicate, or a plural subject with a singular predicate. The existence of both of these is hardly a new observation; yet the claim that, despite the fact that both involve a number mismatch, these are two entirely distinct phenomena has not been explicitly and widely acknowledged (see e.g. Pollard & Sag 1994; and Kim 2004 for works that propose a unified analysis for both types of mismatch). In this section I introduce the two mismatches; evidence that the two are distinct follows in the next section.

2.1   Singulars with plural agreement ('SG/PL')

Certain group nouns (or collective nouns), such as *family*, *faculty*, or *committee*, have long been known to optionally give rise to plural agreement despite being morphologically singular (see e.g. Corbett 1979; Pollard & Sag 1994; Elbourne 1999; den Dikken 2001; Sauerland 2004; Smith 2013). Well-known examples from British English like the following are quite familiar:

(1)   My/this family is/are very open minded.

While cases like this have often been given as evidence in favour of the existence of semantic agreement, they have also been known to be rather restricted on at least two levels. First, the grammaticality of plural agreement with such nouns is known to be subject to cross-linguistic and cross-dialectal variation, with American English often cited as minimally contrasting with British English in not allowing such agreement. Second, even for dialects that do allow plural agreement as in (1), such agreement is not possible with other morphologically singular nouns that can be understood as denoting a collection of individual entities, such as mass nouns with clearly identifiable 'atoms':

(2)   *Their silverware are very expensive.

(3)   *The equipment in this room are new.

Thus, the theoretical question is what restricts the ability of semantic factors to trigger plural agreement with singular nouns. In the remainder of this paper, this kind of mismatch would be referred to as 'SG/PL'.

2.2   Plurals with singular agreement ('PL/SG')

The question just raised becomes even more interesting once we try to construct comparable examples with morphologically plural nouns denoting a singular entity. Nouns such as English *scissors*, or Hebrew *šamayim* 'sky' and *ofanayim* 'bicycle', which are

morphologically plural even when referring to what is semantically singular, cannot
trigger singular agreement:

(4)   *ha-ofanayim   ha-xadašim šeli nignevu / nignav.*
       the-bicycle.PL the-new.PL my stolen.PL/ stolen.SG
       'My new bicycle was stolen.'

The challenge to approaches that argue for semantic agreement as part of the grammar
is thus to explain why it is not a freely available operation. An alternative view that
seems to suggest itself at this point is that it is not the grammatical operation of agree-
ment which is semantically influenced here, but the lexical specification of features of
the noun. We later return to this issue.

   In contrast to the ungrammatical singular agreement with plurals just discussed,
a similar agreement mismatch is in fact possible in another environment. Many lan-
guages allow copular clauses with plural subjects and a singular copula and/or predi-
cate, as in the following examples from English and Hebrew:

(5)   a.   Twenty guests is too much for me.

       b.   *esrim   orxim ze   yoter miday bišvili.*
             twenty   guests COP-Z.SG.M too   much for.me
             'Twenty guests is too much for me.'

Lack of plural agreement is not the only special property of such sentences.

   As discussed e.g. by Greenberg (2008) and Danon (2012), such number agree-
ment mismatches in Hebrew correspond to the use of the pronominal copula *ze*, often
glossed PRONZ, a notation which will be used in the remainder of this paper. Hebrew
also has another pronominal copula, *hu* ('PRONH'), with which such agreement mis-
matches are not possible. This split between an agreeing copula and a non-agreeing
one is perhaps not unique to Hebrew; similar facts can also be found, for instance, in
Russian, as illustrated in the following exampes (Ilona Spector Shirtz, p.c.):[2]

(6)   a.   *Pomidory   (oni)   vkusnyje.*
             tomatoes.PL.M COP.PL tasty.PL.M
             'Tomatoes are tasty.'

       b.   *Pomidory   èto   vkusno.*
             tomatoes.PL.M COP.SG. tasty.SG.N
             'Tomatoes is a tasty thing.'

---

2.   The use of the copula *eto* in Russian has been noted in previous work mostly in the context
of equative sentences (Geist 2007; Markman 2008). This copula is not restricted to equatives,
however, as the example in (6b) illustrates. Note also that the agreeing present tense copula is
usually omitted (Ilona Spector Shirtz, p.c.).

While there might be doubts regarding whether *oni* in sentences like (6a) and *eto* in sentences like (6b) are indeed copulas, as tentatively assumed in the given gloss, what matters to the current discussion is simply the fact that non-agreeing clauses such as (6b) are grammatically distinct from 'ordinary' copular clauses such as (6a) in ways that do not seem to follow from simply treating the former as semantic agreement.[3] For many other languages, however, the copula used in such number mismatches (which will be referred to as 'PL/SG', meaning 'plural subject with singular copula/ predicate') is not different from the 'regular' agreeing copula (other than in terms of the features that it bears). In Mainland Scandinavian, for instance, PL/SG occurs with the same copula that is used with agreeing subjects (Hellan 1986; Josefsson 2009), similar to the situation in English illustrated in (5a) above.

Besides agreement itself, PL/SG sentences also display a range of semantic properties that distinguish them from other copular clauses (Greenberg 2008; Josefsson 2009; Danon 2012). One notable semantic property of examples like those in (5) is that they only allow a *collective* reading of the subject (Hellan 1986; Danon 2012): Both the English sentence and the Hebrew one can only mean that twenty guests *together* is too much for me; no distributive reading ('There are twenty guests such that each of them is too much for me') is available here. As such, it is tempting to consider sentences of this type as displaying semantic agreement, where singular is the result of conceptualizing the group as a single entity. Pollard and Sag (1994:86) indeed consider similar English examples, which they label 'singular plurals', and group them together with the following cases under the category of NPs that bear singular agreement features despite being formally plural:

(7)   Eggs is my favorite breakfast.

(8)   Steak and okra appears to bother Kim.

However, as noted by Pollard and Sag themselves, simply allowing the grammar to assign singular features to plural NPs whenever such NPs collectively refer to a single entity seems to be too unconstrained, as witnessed by ungrammatical sentences like the following (from Pollard & Sag 1994:87):

(9)   *Raccoons is getting to be a big problem in this neighbourhood.

(10)   *Kim and Sandy is carrying the piano upstairs (together).

---

3.   For reasons of space limitation, it will simply be assumed in this paper that PRONZ is indeed a copula and not a subject pronoun (which might be a reasonable alternative if such sentences were taken as some sort of Left Dislocation construction). Detailed evidence against a subject pronoun analysis is given in Danon (in press). It is left for further research to see to what extent the same arguments provided for Hebrew are also applicable to Russian; see also Partee and Borschev (2008) and Reeve (2010) for relevant discussions of Russian copular constructions.

Pollard and Sag leave this as an open issue. One of the goals of this paper is to show that there is an alternative analysis of PL/SG that offers an interesting insight into why at least some of these cases are ungrammatical.[4]

Before proceeding any further, we should rule out one seemingly trivial account of the agreement pattern in copular clauses like those in (5). As noted by e.g. Heller (2002), Greenberg (2008) and Josefsson (2009), sentences of this type often have a 'hidden eventuality' interpretation, which could be paraphrased by using a clausal subject. Thus, (5) for instance could be paraphrased as 'Having/entertaining twenty guests is too much for me'. If we assumed that there is indeed an underlying clausal subject in such sentences, and that what looks like the subject is in fact the object of a phonetically null verb, then the singular agreement that we observe would no longer be a puzzle, as this is the normal agreement pattern with clausal subjects. While analyses along these lines have indeed been proposed (see e.g. Josefsson 2009), it was argued extensively in Wechsler (2011) and Danon (2012; in press) that such analyses make a series of wrong predictions about the distribution and the interpretation of such clauses. In what follows, I will assume that even though such an analysis might be suitable for a small subset of sentences displaying an agreement mismatch (to be discussed in Section 4.5), this is not the right analysis overall.

2.3 The proposal

The facts so far seem almost contradictory: On the one hand, we have at least two clear cases of what looks like semantic number agreement; but on the other hand, we have also seen that such agreement is not always possible. Rather than resorting to incorporating semantic agreement into the grammar and augmenting this with an ad-hoc list of constraints, we should start by taking a more careful look at the facts. In what follows I argue that the two cases of 'semantic agreement' are completely different from each other – in their syntactic distribution, in their semantic correlates, and in their origin. In Section 3 I focus on the empirical differences between the two. This leads to the following two hypotheses, the details of which are developed in Section 4:

(11) Plural agreement with a singular noun (SG/PL) is regular syntactic agreement, where the appearance of semantic agreement follows from the lexical properties of the noun.

(12) Singular 'agreement' with plurals (PL/SG) is not semantic agreement, and in fact not agreement at all, but lack of agreement, which is constrained by general principles of grammar.

---

4. The analysis in Section 4 will offer an explanation for the ungrammaticality of (10); admittedly, Example (9) still remains a puzzle, which is possibly subject to a generalization discussed in Section 4.5.

These hypotheses will then be implemented formally in an explicit model of the feature distribution within noun phrases.

3. Two types of number mismatch: Empirical evidence

This section is devoted to showing that singular subjects with a plural predicate (SG/PL) display a number of properties that clearly set them apart from plural subjects with a singular predicate (PL/SG). Besides simply showing that we are dealing with two distinct phenomena, the purpose of the following discussion is to argue that many of the observed properties are quite unexpected under an analysis that simply reduces both of these to semantic agreement. Thus, if 'semantic agreement' does not account for the data, an alternative analysis would have to be proposed.

3.1 Distribution: Copular clauses versus verbal predicates

Even an informal look at previous works that discuss the phenomenon of PL/SG will leave very little doubt that the vast majority of quoted examples involve copular clauses; see e.g. Reid (2011), who provides numerous such examples; or den Dikken (2001), who notes this pattern and focuses on the fact that many of these copular clauses are specificational. To the best of my knowledge, however, this tendency of PL/SG to be associated with copular constructions has never been accounted for; even though there have been various analyses of PL/SG in copular clauses (see e.g. Greenberg 2008 and Danon 2012 for Hebrew; Hellan 1986 and Josefsson 2009 for Scandinavian), these did not explicitly address the question of why the same pattern is not observed elsewhere. In fact, even this descriptive generalization seems to have been mostly missed. I will thus begin by illustrating this constraint on the distribution of PL/SG.

As is discussed in Section 2.2 above, PL/SG is found in copular clauses in Hebrew, English, Russian, and Scandinavian, among other languages. Somewhat surprisingly, however, this pattern cannot be reproduced when the predicate is verbal. We thus find minimal pairs like the ones below; even though not all speakers reject the (b) examples below as fully ungrammatical, there is no doubt that these are significantly degraded compared to the perfectly grammatical (a) examples.[5]

(13) a. *šaloš enayi   ze   macxik.*
          three eyes.PL.F COP-Z.SG.M funny.SG.M
          'Three eyes is funny'.

---

5. The fact that the (b) examples are not entirely ungrammatical seems to be part of a broader generalization which is discussed briefly in Section 4.5.

     b.   *??/*šaloš enayim   hicxik   et   ha-yeladim*

         three eyes.PL.F made.laugh.SG.M OM the-children

         'Three eyes made the children laugh.'

(14)   a.   Three late papers is annoying.

       b.   *??/*Three late papers annoys me.

Note, however, that PL/SG is possible not only in copular clauses but also with raising verbs, if the subject has raised out of a non-verbal small clause:

(15)   *šaloš enayim nir`a   li   macxik.*

      three eyes.PL.F seem.SG.M to.me funny.SG.M

      'Three eyes seems funny to me.'

(16)   Three late papers seems annoying.

This implies that the constraint is not one of surface position but one that has to do with the base position of PL/SG subjects and/or with their relation to the predicate. Descriptively, these facts can be captured by the following generalization:

(17)   PL/SG is not possible if the (plural) subject is a thematic argument of a verb.

Such a generalization is unexpected if PL/SG is simply semantic agreement: If singular morphology on the predicate is the result of the subject being interpreted as denoting a single (collective) entity, there is no obvious reason why this should not be possible with thematic subjects; see also Pollard and Sag (1994:87), who leave it as an open problem why such examples are ungrammatical.

    In contrast to PL/SG, no such restriction is observed with SG/PL. This is illustrated for Hebrew and for English in the following examples, both of which are grammatical (for speakers who allow SG/PL at all):[6]

(18)   *kol ha-kita   hicxiku   et   ha-mora.*

      all the-class.SG.F made.laugh.PL OM the-teacher

      'The whole class made the teacher laugh.'

(19)   Her family understand these moods.

One last detail regarding the distribution of PL/SG versus SG/PL in copular clauses has to do with the choice of copula. As noted above and illustrated in (20), PL/SG in Hebrew requires the use of the PRONZ copula, which is homophonous with an inanimate pronoun and which never agrees with the subject. In contrast, SG/PL in copular clauses is possible only with the PRONH copula, which is homophonous with an animate 3rd

---

6.   Judgments on SG/PL in Hebrew are subject to a great deal of variability, but there is no doubt that this agreement pattern is present in the language. The issue of variability is discussed elsewhere in this paper.

person pronoun and which always agrees with the subject – in this case, showing plural agreement, as shown in (21):

(20) a. *krovey mišpaxa   ze   metiš.*
          relatives   COP-Z.SG.M   exhausting.SG.M
          'Relatives is(/are) exhausting.'

     b. **krovey mišpaxa hu /hem   metiš.*
          relatives   COP-H.SG.M/COP-H.PL   exhausting.SG.M
          'Relatives is(/are) exhausting.'

(21) a. *ha-mišpaxa   šela hem   omanim.*
          the-family.SG.F her COP-H.PL artists
          'Her family are artists.'

     b. *??/*ha-mišpaxa   šela ele   omanim.*
          the-family.SG.F her COP-Z.PL   artists
          'Her family are artists.'

Such a contrast would have been unexpected if SG/PL were the same phenomenon as PL/SG, and specifically does not seem to follow from the semantic agreement hypothesis. Since PRONH is the copula that is used also when there is no agreement mismatch, these facts all suggest that SG/PL, but not PL/SG, is 'unremarkable' from the point of view of syntax.

Descriptively, then, the conclusion so far is that PL/SG and SG/PL have very different distributions: while PL/SG is restricted to environments that can be defined in grammatical terms, SG/PL does not seem to be sensitive to such grammatical constraints. While the facts discussed in this section still do not rule out an analysis of SG/PL as 'just' semantic agreement, the same trivial analysis does not seem to offer any insight regarding the distribution of PL/SG discussed above.

3.2   Binding and control

If both SG/PL and PL/SG involved nothing beyond semantic assignment of agreement features, we would expect the subject in both of these mismatch cases to display typical subject properties. Specifically, subjects triggering semantic agreement would still be expected to be able to participate in binding and control relations, possibly with the bound or controlled element displaying the same feature values as those on the agreeing predicate. In the case of SG/PL, this is indeed the case. A singular subject triggering plural agreement may bind an anaphor, which would be plural:

(22) My family always help themselves/each other.

(23) *ha-mišpaxa   šeli tamid ozrim le-acmam /   ze le-ze.*
       the-family.SG.F my   always help.PL to-themselves / to each other
       'My family always help themselves/each other.'

Similarly, SG/PL subjects may also control into complement or adjunct clauses:

(24) *kol ha-kita   hexlitu   lehištatef.*
      all the-class.SG.F decided.PL participate.INF
      'The entire class$_i$ decided PRO$_i$ to participate.'

(25) *kol ha-kita   hicxiku   et ha-mora   bli   lehitkaven.*
      all the-class.SG.F made.laugh.PL OM the-teacher without intend.INF
      'The entire class$_i$ made the teacher laugh without PRO$_i$ meaning to.'

With PL/SG, on the other hand, the situation is quite different. As noted in Danon (2012), plural subjects in Hebrew copular clauses with the (singular) PRONZ copula cannot bind an anaphor. This is illustrated below:

(26) *te`omim ze   nexmad   (*ze le-ze).*
      twins.PL COP-Z.SG.M nice.SG.M to each other
      'Twins is nice (*to each other).'

The same is also true for English: binding by a PL/SG subject is impossible, regardless of whether the anaphor is singular or plural:

(27) *Three children is fun for itself/themselves/each other.

Similarly, control is not possible, either, with PL/SG. Due to the fact that PL/SG is ruled out when the subject is a thematic argument of a verb, it is not possible to construct relevant sentences with control by a PL/SG subject into complement clauses. Cases of control into adjunct clauses can however be constructed, and as the following examples show, these are ungrammatical:

(28) *Two mothers is annoying without noticing it.

(29) *štey imahot   ze   me`acben   bli   lehargiš.*
      two mothers.PL.F COP-Z.SG.M annoying.SG.M without notice.INF
      'Two mothers$_i$ is annoying without PRO$_i$ noticing it.'

These facts do not follow from a semantic agreement analysis of PL/SG, and seem to suggest that something else is involved in PL/SG. Once again, PL/SG stands in sharp contrast to SG/PL, where the observed facts are in line with the predictions of a semantic agreement analysis.

3.3 Semantic properties of the subject

An analysis of SG/PL and PL/SG as semantic agreement would obviously make a claim about the kind of interpretation that each subject receives: as a group of individuals in the former case, and as a collective entity in the latter. The question is whether there are any semantic constraints on the denotation of the subject that this analysis does not predict. Below we look at semantic constraints on quantified and non-quantified subjects.

3.3.1   *Quantification*

A very robust descriptive generalization is that SG/PL is quite common with subjects that are quantified noun phrases (QNPs). Both weak and strong quantifiers are possible, as illustrated below for Hebrew:

(30)   *xelek   me-ha-kita   lo   hexinu   ši`urim*
       part/some from-the-class.SG.F NEG   prepared.PL homework
       'Some of the students in the class didn't do their homework.'

(31)   *rov/kol   ha-maxlaka   hištatfu   ba-pgiša.*
       most/all   the-department.SG.F participated.PL in.the-meeting
       'Most/all of the (members of the) department participated in the meeting.'

That quantification has a positive effect on the grammaticality of SG/PL is not surprising under the semantic agreement analysis, as quantification of the type illustrated above necessarily involves some sort of type shifting of the singular noun into a plurality. In fact, for many speakers of Hebrew, SG/PL is the preferred agreement pattern with quantified group nouns, often judged even more acceptable than singular agreement.[7]

Turning now to PL/SG subjects, we note that not all quantifiers are possible. While weak quantifiers, such as numerals (as in many of the examples given above), are perfectly acceptable, strong quantifiers usually render PL/SG ungrammatical or marginal (Danon 2012):[8]

(32)   *??/*kol/rov   ha-orxim   ze   margiz.*
       all/most   the-guests.PL COP-z.SG.M   annoying.SG.M
       'Intended: All/Most of the guests is annoying.'

This does not follow simply from a requirement that subjects of PL/SG must be interpreted collectively, as a single entity: There is no obvious reason why a universally quantified subject, for instance, would not be interpreted collectively as a sum of indi-

---

7.   Agreement with quantified subjects often gives rise to more than one grammatical option, where the features of the predicate may match those of the quantifier, those of the noun, or be 'semantic'; see e.g. Danon (2013).

8.   As noted by an anonymous reviewer, if we replace the quantified subject in (32) with a small clause whose subject is the quantified nominal, the sentence becomes grammatical:

(i)   *kol ha-orxim   be-xeder exad ze   margiz.*
      all the-guests in-room one COP-z.SG.M annoying.SG.M
      'All the guests in one room is annoying.'

Since here the quantified noun phrase is not the subject of the main clause, this is not a counter-example to the generalization illustrated in (32). The use of a singular copula in (i) is trivially accounted for if the subject is clausal.

viduals. In Danon (2012) it was proposed that this pattern is the result of a requirement that the subject of Hebrew copular clauses with the PRONZ copula receive a predicational interpretation. Under the assumption that weak quantifiers can be analyzed as predicate modifiers, a phrase like *three guests* may denote sets of entities consisting of 3 guests, which is compatible with the requirement for a predicational reading. This kind of interpretation is not available for a phrase containing a strong quantifier, like *all the guests*. Thus, the restriction on quantified subjects of PL/SG, which does not follow from the semantic agreement analysis, can be derived from a requirement that the subject should get a predicative reading; we postpone the discussion of why such a requirement should hold until we present the analysis in Section 4.4.

3.3.2 *Definiteness, specificity and genericity*
A look at previous works on SG/PL should quickly reveal that the vast majority of cited examples involve a subject which is definite. In fact, SG/PL subjects are often judged as marginal or ungrammatical when indefinite or nonspecific. This is illustrated by the following contrast:

(33) a. The/my family are making important decisions.
      b. ??/*One family are making important decisions.

Consequently, SG/PL seems to be common mostly when the subject contains a definite article, possessive or demonstrative. Previous works have noted that SG/PL is usually impossible in existential sentences (Elbourne 1999; den Dikken 2001; Sauerland 2004; Smith 2013); for a survey of some of the major approaches to accounting for this fact, see Smith (2013). Regardless of its abstract cause, the empirical generalization that SG/PL favors highly D-linked definite subjects is an independently robust fact. Whether or not this fact can be derived from the semantic agreement analysis is left as an open question; if there is a way to derive this, the relation is not trivial.

Turning now to PL/SG, we find a very different picture. Unlike the case with SG/PL, definites are usually *less* natural than indefinites in PL/SG:

(34) (??ha-)sandalim ze   no`ax.
      (the-)sandals.PL COP-Z.SG.M comfortable
      '(The) sandals is comfortable.'

Yet it should be noted that definites are not ruled out in PL/SG (see also Josefsson 2009), as shown in the following example:

(35) ha-horim   šela ze   metiš.
      the-parents.PL her COP-Z.SG.M exhausting
      '(Dealing with) her parents is exhausting.'

In any case, this pattern is not expected under the semantic agreement analysis of PL/SG.

Another fact that is not expected under the semantic agreement view is the inter-action of PL/SG with specificity and genericity. When a numeral is present, a PL/SG can only get a nonspecific interpretation (see Hellan 1986 for a similar observation for Danish). For instance, the subject in (36) below can only be interpreted generically ('any collection of three teenagers'), as opposed to the specific reading available in a sentence like (37):

(36)   Three teenagers is/seems to be dangerous.

(37)   Three teenagers surrounded us.

Thus, while the obligatory collective interpretation does seem to follow under the semantic agreement analysis, the obligatory non-specific reading does not.

Similar patterns are observed with bare plural indefinites that do not contain a numeral: only a generic reading is available, not a specific one. Notice, furthermore, that in this case it is no longer clear that a collective reading is required (or even possible):

(38)   *mitbagrim   ze   mesubax.*
       teenagers.PL   COP-z.SG.M   complicated.SG.M
       'Teenagers is(/are?) complicated.'

In this case, the lack of plural agreement cannot simply be explained as semantic agree-ment, since generic plurals in other environments always trigger plural agreement, as in the following example:

(39)   *mitbagrim   son`im/*sone   et   kol ha-olam.*
       teenagers.PL   hate.PL/hate.SG.M   OM   all the-world
       'Teenagers hate the whole world.'

We thus conclude that while the collective interpretation associated with PL/SG subjects could be linked to semantic agreement, genericity and non-specificity are unexpected properties that the semantic agreement analysis cannot account for. If non-specificity follows from some independent property of the constructions in which PL/SG occurs, the question is whether lack of plural agreement does not follow from the same prop-erty as well, a possibility that would render the semantic agreement analysis redundant here.

3.4   Productivity

Finally, another contrast between PL/SG and SG/PL involves their degree of productiv-ity. Cross-linguistically, as was noted already, PL/SG seems to be extremely common. In contrast, the availability of SG/PL in a language is much less predictable (Smith 2013, Footnote 11, lists some languages in which there might be some evidence for SG/PL,

but suggests that this evidence is anecdotal and that SG/PL is not a universally available option). The prototypical example for this is the familiar dialectal variation between British and American English. However, even for such language varieties, it has been noted (Bock et al. 2006) that the difference might be more subtle than a simple binary parameter, a fact supported by the intermediate status of other dialects of English (Smith 2013). This leads to the issue of language-internal productivity. As noted by Levin (2001), not all collective (group) nouns are equally acceptable with SG/PL.

At an even more basic level, the mere fact that SG/PL is possible only with human (and possibly other animate) group-denoting nouns is a lexical property not found in PL/SG. The following examples illustrate this lexical restriction on SG/PL:

(40)   *kol ha-kita   nirtevu   ba-gešem.*
      all the-class.SG.F got_wet.PL in.the-rain
      'The entire class got wet in the rain.'

(41)   **kol ha-osef   nirtevu   ba-gešem.*
       all the-collection.SG.M got_wet.PL in.the-rain
      'The entire collection got wet in the rain.'

While both nouns can easily be understood as denoting sets of individual entities, and both can plausibly serve as the THEME argument of the verb *nirtav* 'got wet', SG/PL is perfectly grammatical with *kita* 'class' but not with *osef* 'collection'. Compare this now to the situation with PL/SG, where no such lexical sensitivity is observed, as illustrated by numerous examples throughout this paper. This strongly suggests that while the explanation for PL/SG lies within the grammar, SG/PL should be accounted for in the lexicon.

4.   An analysis of *phi*-feature mismatches

In the previous section we have established that SG/PL and PL/SG are two distinct phenomena: The former seems to be a matter of the lexical properties of the noun, regardless of its syntactic environment;[9] while the latter is a productive grammatical operation, which is sensitive more to the syntactic environment than to the specific lexical choice of noun. In both cases, however, it is not semantics that determines the conditions that constrain the agreement mismatch.

In this section I propose an analysis for these two agreement mismatches. Underlying both mismatches is the hypothesis that there are two distinct bundles of agreement

---

9.   Admittedly, this is an oversimplification; for a discussion of some grammatical constraints on SG/PL, see e.g. Smith (2013) and references cited there.

features. Additionally, the analysis of PL/SG will crucially revolve around proposing a principled dependency between agreement and argumenthood.

4.1 Previous proposals

Most previous analyses of PL/SG have attempted to derive singular agreement by arguing that the copula agrees with something other than the overt noun phrase that it follows. Thus, for instance, Josefsson (2009) argues that the overt noun phrase in Scandinavian PL/SG is in fact the object of an underlying clausal subject, which triggers singular agreement just like other clausal subjects. Greenberg (2008), on the other hand, stipulates that the Hebrew PRONZ can only agree 'to the right', with the predicate, and argues that an adjectival predicate is actually headed by an abstract noun which triggers singular agreement.

   An alternative approach, which the current paper will also pursue, is that the morphological features of the subject's lexical head are not visible to the copula. The first such analysis was proposed by Hellan (1986), in an early precursor to the DP hypothesis which distinguished between the features of N itself and those of an abstract functional head dominating it. Danon (2012, in press) proposes another analysis that argues for a multi-layered approach to the features of the subject; this serves as the basis for the analysis below.

   As to SG/PL, we can distinguish two main lines of analysis. One approach, found e.g. in den Dikken (2001) and Sauerland (2004), argues that plural-agreeing singulars are structurally complex and contain an additional abstract head which is responsible for their observed plural properties. A second approach, advocated e.g. by Elbourne (1999), Wechsler and Zlatić (2000, 2003), and Smith (2013), argues that such nominals possess both singular and plural features at the same time, without being structurally more complex than other noun phrases. It is this approach which I will argue for in the following sections. I start by ruling out a relatively simple model in which a noun phrase has only one NUMBER feature; a much more elaborate discussion of how this kind of reasoning rules out a broader range of analyses can be found in Smith (2013).

4.2 Against a one-level model

At least in the case of SG/PL, a tempting approach is to simply assume that the relevant group nouns can optionally be specified with (syntactic) agreement features that differ from those marked by the morphology. Under such an approach, what looks like a singular noun is actually plural as far as syntactic computation is concerned.

   This kind of simplistic approach, however, cannot be correct. As noted by Corbett (1979), Pollard & Sag (1994), Elbourne (1999), Kathol (1999), Wechsler and Zlatić (2003), Kim (2004) and Smith (2013), what such an analysis predicts is that when verb/predicate agreement is 'semantic', so would subject-internal CONCORD be. But as

noted by these authors, group nouns actually give rise to hybrid agreement, in which subject-internal agreement is singular while predicate agreement is plural:

(42)   This/*these family are very helpful.

(43)   *ha-mišpaxa   ha-zot/ *ha-ele   ozrim   hamon.*
        the-family.SG.F the-this.SG.F/the-these.PL help.PL plenty
        'This family is/are very helpful.'

Thus, nouns like *family* differ from nouns like *fish* that are ambiguously either singular or plural. What is needed is a way to encode the fact that group nouns may behave as both singular and plural at the same time.[10]

    Despite the differences between SG/PL and PL/SG, the same reasoning which rules out a single feature approach to SG/PL applies also to PL/SG. As discussed in Danon (2012), PL/SG is possible even when the subject contains plural (and/or feminine) modifiers agreeing with the head noun:

(44)   *agvanyot   organiyot   ze   ta`im.*
        tomatoes.PL.F organic.PL.F COP-z.SG.M   tasty.SG.M
        'Organic tomatoes are (is?) tasty.'

Such facts are problematic for models in which a noun is specified for a simple bundle of gender/number features, which are 'passed on' to the NP/DP level and which serve as the sole target for nominal agreement. In the next section we discuss two previous proposals that provide a solution for these issues.

4.3   A two-level model of agreement

The most detailed and explicit formal analysis of split/hybrid agreement is the INDEX/ CONCORD analysis developed mostly within the HPSG framework (Kathol 1999;

---

10.   Smith (2013) observes the hybrid agreement with English demonstratives, and argues that the fact that the demonstrative must match the morphological (rather than the semantic) number of the noun follows from the symmetrical c-command relation between the demonstrative in D and the NP which is its complement. I am not sure whether such an approach can account for the same restriction in Hebrew, where demonstratives seem to be structurally similar to adjectives; and where all attributive adjectives display the same pattern of hybrid agreement as demonstratives do:

(i)   *ha-mišpaxa   ha-me`acbenet/*ha-me`acbenim   šeli   lo*
        the-family.SG.F the-annoying.SG.F/the-annoying.PL my   NEG

        mevinim   klum.
        understand.PL nothing

        'My annoying family doesn't understand anything.'

Wechsler & Zlatić 2000, 2003). According to this analysis, nouns are specified not for one, but two, bundles of syntactic agreement features: INDEX and CONCORD. INDEX, which consists of person, number and gender, is the bundle of features that typically participates in pronominal binding and in subject-predicate agreement. CONCORD, on the other hand, consists of case, number and gender features, and is the bundle of features with which NP-internal adjectives agree. While the number and gender values of both bundles usually match, INDEX-CONCORD mismatches are sometimes possible because these are distinct linguistic objects. In such cases, INDEX usually matches the semantics, while CONCORD tends to match the morphology (see Wechsler & Zlatić 2000, 2003 for a thorough discussion of both the empirical motivation and the explanatory advantages of this model).

Even though the INDEX-CONCORD model has been used mostly within constraint-based frameworks, there is no principled reason not to incorporate it into Minimalist syntax as well. Two recent attempts along these lines are presented by Danon (2012, 2013). At a technical level, this implies that the basic bundle of 'phi-features' should be replaced by two distinct bundles, each of which plays a role in different operations within syntax and at the interfaces with other modules (see also Smith 2013). The appearance of a single bundle, in this model, can be traced back to the lexical level, where nouns typically enter the derivation with matching values for their two number and two gender features.

An alternative way to encode this kind of duality would be to exploit the standard assumption that a 'noun phrase' is structurally composed of more than one maximal projection. Thus, we might hypothesize that even though the features found on DPs typically match those on the NP that they dominate (see e.g. Danon 2011), it is also possible for D^0 to enter the derivation with different feature values; as a result, agreement below the DP level, which would involve the features of NP, would diverge from agreement above the DP level, which would involve the features of DP. An analysis along these lines, which predates the DP hypothesis, can be found in Hellan (1986).

To a large extent, the INDEX-CONCORD analysis and the DP-NP analysis are nearly equivalent and make the same predictions. I will therefore leave the choice between these as an open question; for expository reasons, the following discussion makes use of the terminology of the former approach. In the next section, I will show how the SG/PL and PL/SG facts can be represented under this kind of two-level model of agreement features.

4.4   Application to PL/SG and SG/PL

We begin with the analysis of PL/SG; our analysis of this phenomenon is based on Danon (2012). The main empirical observation in that work was that subjects in Hebrew PL/SG sentences containing the copula *ze* not only fail to agree with the copula

and with the predicate, but they also fail to bind anaphors and do not seem to behave like argumental DPs. Based on that, it was proposed that these DPs are characterized by lacking an INDEX altogether. This has the syntactic consequence of making them invisible to any operation – agreement or binding – that must involve a DP's INDEX features; it also has the semantic consequence of blocking an argumental interpretation of these DPs, which were argued to be interpreted as predicates.

As was noted above, the distribution of PL/SG is not free: as shown above, non-agreeing plural subjects are possible in copular clauses and when raised out of a small clause, but not as thematic arguments of a verb. There are two ways in which this can be accounted for within the proposed framework. The more direct approach would be to simply state that theta role assignment is mediated by the bundle of INDEX features, and hence a DP with no INDEX cannot receive a role from the verb. The problem with this approach is that it would require us to stipulate that non-nominal arguments, i.e. CPs and PPs, have an INDEX too; this would 'bleach' the concept of INDEX as a bundle of nominal agreement features.

Another alternative would be to combine the main insight of the *Visibility Condition* (Chomsky 1986) with the Minimalist assumption that Case depends on agreement (Chomsky 2000, 2001). The latter assumption entails that a DP that does not agree (as a result of lacking an INDEX in this case) cannot have its Case feature valued; and if, in line with the *Visibility Condition*, Case is required for theta role assignment, it would follow that a DP that lacks INDEX cannot receive a theta role. As a result, the distribution of such DPs is restricted to non-thematic positions. This analysis is not specific to Hebrew copular clauses, and easily generalizes to similar constructions across different languages. This analysis hence correctly predicts the high level of crosslinguistic productivity of PL/SG.

This analysis also predicts the availability of PL/SG in additional constructions, such as in English existential *there*-sentences. Even though this prediction seems to be wrong for Standard English, a look at actual language use reveals that this does in fact occur more often than what can simply be dismissed as a performance error. A search of the Corpus of Web-based English (Davies 2013) brings up results such as the following:

(45)   a.   But there is problems with your article
       b.   …there is signs that things are improving
       c.   I think that there is possibilities of other life forms in other galaxies.

Thus, while not fully productive, these examples do provide partial confirmation of the predictions of the analysis.

We conclude that under the proposed analysis, PL/SG is not semantic agreement in any sense; instead, it is lack of agreement, where singular on the predicate is simply the default value for the number feature.

Turning now to SG/PL, we note, first of all, that unlike PL/SG, this cannot be a default specification of features. Instead, let us assume that the relevant nouns optionally carry a plural INDEX feature (see also Smith 2013); the fact that they allow hybrid agreement, as discussed in Section 4.2 above, means that these nouns display an INDEX-CONCORD mismatch (Wechsler & Zlatić 2000, 2003). While the term 'semantic agreement' is intuitively suitable here, at a technical level this term is wrong, as it implies that the agreement operation itself can 'see' a DP's semantic content, which is not the case in this analysis. Instead, what is 'semantic' here is only the *lexical* specification of INDEX features, which is in line with the empirical findings in Bock et al. (2006); syntax, including agreement, needs to make no reference to the semantics under this analysis.

This analysis of SG/PL is compatible with a variety of theoretical frameworks. For a Minimalist implementation within a framework such as that of Chomsky (2000, 2001), we simply need to replace the single 'phi' bundle with two distinct feature bundles, just as for the analysis of PL/SG proposed above. For an HPSG-style analysis, no special assumptions are necessary beyond the INDEX-CONCORD distinction.

With this much said, we can now account for the various differences that were noted earlier between PL/SG and SG/PL. The fact that PL/SG is restricted to DPs in non-thematic positions has been accounted for by exploiting the hypothesized lack of features of these DPs; the fact that SG/PL is not subject to the same restrictions follows immediately since group DPs triggering plural agreement do bear INDEX features just like any other argumental DP. Similarly, the fact that subjects in PL/SG, but not in SG/PL, fail to participate in binding and control relations follows straightforwardly from the same distinction between DPs without INDEX and DPs with INDEX. Finally, the difference in terms of productivity also follows: it could be seen as the null hypothesis that lack of INDEX at the DP level, giving rise to PL/SG, is a productive option allowed by the grammar of human language as long as it does not lead to a violation of other principles (such as the need for theta role assignment). In contrast, having the INDEX features of a noun specified with a different number value than its CONCORD is a marked option at the lexical level (Wechsler & Zlatić 2000, 2003), and hence is expected to be subject to much variability both within a given language and across languages and dialects.

4.5   Residual problems

While the analysis above accounts for most of the salient properties of the two constructions, there are still some unresolved issues; due to space limitations, however, I will discuss here only two.

As discussed above, non-agreeing plural subjects are impossible if they are interpreted as thematic clausal arguments. While this is true in the vast majority of cases,

examples like the following, which look like potential counterexamples, have also been cited in the literature:

(46)   Eggs bothers me more than okra. (Pollard & Sag 1994: 70)

(47)   Unleashed dogs on city sidewalks threatens the health and welfare of law-abiding citizens. (Pollard & Sag 1994: 86)

(48)   Two drops deodorizes anything in your house. (Reid 1991, cited in Kim 2004)

In all examples of this type, it looks like the non-agreeing subject bears the theta role of (non-volitional) CAUSE. It might be proposed that in these cases the subject is not merely the overt DP but is a clausal subject containing a phonetically null verb, along the lines proposed by e.g. Josefsson (2009). We leave it as an open question whether this kind of analysis could account for what looks like a rather specific type of exception to what otherwise looks like a fairly robust generalization.

A second residual problem is the fact that in some languages, such as English, PL/SG sentences that are predicted by the analysis above to be grammatical are not always judged as entirely acceptable; to some speakers, PL/SG sometimes sounds marginal or only acceptable in colloquial speech. One possible line of explanation would be to consider the fact that English, unlike Hebrew, does not have a distinct copula that is used only in non-agreeing clauses. In the literature on Hebrew copular clauses, it has been claimed that PRONH, the agreeing copula, is a theta role assigner (Doron 1983), which is in line with the analysis proposed in this paper; for PRONZ, the non-agreeing copula, our analysis implies that it is not a theta role assigner. Since English does not have a unique copula which is non-thematic, some speakers might find non-thematic (and hence non-agreeing) uses of the copula to be somewhat 'deviant'. We leave it as an open question whether an analysis along these lines could indeed account for these facts.

5.   Conclusion

Despite the intuitive appeal of treating both PL/SG and SG/PL as instances of semantic agreement, we conclude that there are significant differences between these two number mismatches and that neither of them is 'semantic agreement' in the literal sense. For PL/SG, I have argued for a non-agreement analysis that accounts for the distributional properties of this type of mismatch as well as for its incompatibility with binding and control. For SG/PL, I have argued for an interaction with semantic factors at the lexical level, followed by regular syntactic agreement. Hence, neither of these poses a real problem to the hypothesis that agreement itself is blind to semantics.

References

Bobaljik, Jonathan D. 2008. Where's *phi*? Agreement as a post-syntactic operation. In *Phi-theory: Phi Features Across Interfaces and Modules*, Daniel Harbour, David Adger & Susana Béjar (eds), 295–328. Oxford: OUP.

Bock, Kathryn, Cutler, Anne, Eberhard, Kathleen M., Buttefield, Sally, Cutting, J. Cooper & Humphreys, Karin R. 2006. Number agreement in British and American English: Disagreeing to agree collectively. *Language* 82(1): 64–113.

Chomsky, Noam. 1986. *Knowledge of Language*. New York NY: Praeger.

Chomsky, Noam. 2000. Minimalist inquiries: The framework. In *Step by Step: Essays in Minimalist Syntax in Honor of Howard Lasnik*, Roger Martin, David Michaels & Juan Uriagereka (eds), 89–155. Cambridge MA: The MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A Life in Language*, Michael Kenstowicz (ed.), 1–52. Cambridge MA: The MIT Press.

Corbett, Greville G. 1979. The agreement hierarchy. *Journal of Linguistics* 15: 203–224.

Danon, Gabi. 2011. Agreement and DP-internal feature distribution. *Syntax* 14(4): 297–317.

Danon, Gabi. 2012. Nothing to Agree on: Non-agreeing subjects of copular clauses in Hebrew. *Acta Linguistica Hungarica* 59(1–2): 85–108.

Danon, Gabi. 2013. Agreement alternations with quantified nominals in Modern Hebrew. *Journal of Linguistics* 49(1): 55–92.

Danon, Gabi. in press. ma ze *ze*? nituax taxbiri šel ha-oged "ze" ba-ivrit ha-modernit (What's *ze*? A syntactic analysis of the copula "ze" in Modern Hebrew). To appear in *Hebrew Linguistics*.

Davies, Mark. 2013. Corpus of Global Web-Based English: 1.9 billion words from speakers in 20 countries. ⟨http://corpus2.byu.edu/glowbe/⟩

den Dikken, Marcel. 2001. 'Pluringulars', pronouns and quirky agreement. *The Linguistic Review* 18: 19–41.

Doron, Edit. 1983. Verbless Predicates in Hebrew. Ph.D. dissertation, University of Texas at Austin.

Dowty, David & Jacobson, Pauline. 1988. Agreement as a semantic phenomenon. In *Proceedings of ESCOL*, Joyce Powers & Kenneth de Jong (eds), 95–108. Columbus OH: Ohio State University, Department of Linguistics.

Elbourne, Paul. 1999. Some correlations between semantic plurality and quantifier scope. In *NELS 29: Proceedings of the North East Linguistic Society*, Pius Tamanji, Masako Hirotani & Nancy Hall (eds), 81–92. Amherst MA: GLSA.

Geist, Ljudmila. 2007. Predication and equation in copular sentences: Russian vs. English. In *Existence: Semantics and Syntax*, Ileana Comorovski & Klaus Heusinger (eds), 79–105. Dordrecht: Springer.

Greenberg, Yael. 2008. Predication and equation in Hebrew (nonpseudocleft) copular sentences. In *Current Issues in Generative Hebrew Linguistics* [Linguistik Aktuell/Linguistics Today 134], Sharon Armon-Lotem, Gabi Danon & Susan Rothstein (eds), 161–196. Amsterdam: John Benjamins.

Hellan, Lars. 1986. The headedness of NPs in Norwegian. In *Features and Projections*, Pieter Muysken & Henk van Riemsdijk (eds), 89–122. Dordrecht: Foris.

Heller, Daphna 2002. On the relation of connectivity and specificational pseudoclefts. *Natural Language Semantics* 10: 243–284.

Josefsson, Gunlög. 2009. Peas and pancakes: On apparent disagreement and (null) light verbs in Swedish. *Nordic Journal of Linguistics* 32(1): 35–72.

Kathol, Andreas. 1999. Agreement and the syntax-morphology interface in HPSG. In *Studies in Contemporary Phrase Structure Grammar*, Robert D. Levine & Georgia M. Green (eds), 223–274. Cambridge: CUP.

Kim, Jong-Bok. 2004. Hybrid agreement in English. *Linguistics* 42(6): 1105–1128.

Landau, Idan. 2013. Agreement at PF: An argument from partial control. Ms, Ben-Gurion University. ⟨http://ling.auf.net/lingbuzz/001813⟩

Levin, Magnus. 2001. *Agreement With Collective Nouns in English*. Lund: Lund University Press.

Markman, Vita G. 2008. Pronominal copula constructions are what? Reduced specificational pseudo-clefts. In *Proceedings of the 26th West Coast Conference on Formal Linguistics*, Charles B. Chang & Hannah J. Haynie (eds), 366–374. Somerville MA: Cascadilla Proceedings Project.

Partee, Barbara & Borschev, Vladimir. 2008. Existential sentences, BE and GEN NEG in Russian. In *Existence: Semantics and Syntax*, Ileana Comorowski & Klaus von Heusinger (eds), 147–191. New York NY: Springer.

Pollard, Carl & Sag, Ivan A. 1994. *Head-Driven Phrase Structure Grammar*. Chicago IL: University of Chicago Press.

Reeve, Matthew. 2010. Clefts. Ph.D. dissertation, University College London.

Reid, Wallis. 1991. *Verb and Noun Number in English: A Functional Explanation*. London: Longman.

Reid, Wallis. 2011. The communicative function of English verb number. *Natural Language and Linguistic Theory* 29(4): 1087–1146.

Sauerland, Uli. 2004. A team definitely. *Snippets* 9: 11–12.

Smith, Peter W. 2013. Collective (dis)agreement: On a 3/4 pattern of British English collective NPs. In *Proceedings of ConSOLE XX*, Enrico Boone, Martin Kohlberger & Maartje Schulpen (eds), 229–253. Leiden: Universiteit Leiden.

Wechsler, Stephen & Zlatić, Larisa. 2000. A theory of agreement and its application to Serbo-Croatian. *Language* 76(4): 799–832.

Wechsler, Stephen & Zlatić, Larisa. 2003. *The Many Faces of Agreement*. Stanford CA: CSLI.

Wechsler, Stephen. 2011. The structure of Swedish pancakes. Paper presented at CSSP 2011, Université Paris 8.