Collective Nouns: Polysemy and Predication

Predicates can apply to collective nouns, expressions like *team*, *committee* and *court*, in multiple ways. Collective nouns, like plural expressions, allow for distributive and collective predication. I argue that they also allow for a distinct sort of predication that takes a group-as-one as argument. Further, collective nouns allow for both singular and plural agreement. For instance, both 'The team surrounded its coach' and 'The team surrounded their coach' are felicitous. To account for agreement and predication patterns, I argue that collective nouns are polysemous between a group-as-one and a group-as-many meaning. I also draw on views from social ontology on the nature of groups in developing and defending the view.

In *I*, I canvass data and argue through the application of syntactic and semantic tests that predicates can apply to collective nouns in three ways. Next, in *II*, I examine the agreement behavior of collective nouns. I argue that collective nouns allow for singular and plural agreement. Further, I give arguments that an at least partially semantic account of their agreement behavior is needed. In *III*, I draw a distinction between lexical ambiguity and polysemy. I argue that the behavior of collective nouns patterns with polysemes, so they are polysemous. In *IV*, I examine the metaphysics of groups-as-one and groups-as-many. I argue that groups-as-one are structured wholes—entities that are material, but include a structural-functional element that features in their identity conditions. The identity conditions of groups-as-many, in contrast, rely only on material parts. In *V*, I sketch a semantic theory on which collective nouns are polysemous. I show how the treatment accounts for the variety of predication of collective nouns and can handle some worrying cases involving entailment. Finally, in *VI*, I draw concluding remarks.

Before going further, a note on the class of collective nouns to which I'll restrict my inquiry is required. Syntactic and semantic definitions for collective nouns have been suggested. Syntactic definitions have focused on agreement and partitive constructions. Juul (1975) and Crystal (1997) define collective nouns as nouns that can co-occur with a singular or a plural verb. Quirk et al (1985) take collective nouns to be those that can co-occur with a singular or a plural verb or singular or plural pronoun. Barker (1990) defines

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collective nouns as expressions that can take an 'of'-phrase with a plural complement and cannot take an 'of'-phrase with a singular complement as in:

1. the group of armchairs
2. a committee of journalists
3. *the group of armchair
4. *a committee of journalist

Semantic definitions, in contrast. focus on the sorts of things denoted by collective nouns. Collective nouns are usually taken to denote collections that have a privileged decomposition usually into things of the same basic kind (e.g., judges or lions).

Some semantic distinctions affect the agreement and predication behavior of collective nouns. Whether a collective noun denotes a collection of animate or inanimate things has been linked to the noun's agreement behavior. Jespersen (1914) took it that only collective nouns denoting living beings allow for plural constructions. Corpus studies[1] have shown that collective nouns denoting human groups allow plural agreement most often, followed by those denoting non-human animate groups and last, by those denoting inanimate groups, which rarely or never allow plural agreement. For example 'their' in 5 is naturally taken to be anaphoric on 'the army', it is somewhat difficult to hear 'their' in 6 as meaning the members of the pride and 'their' in 7 cannot be taken to be anaphoric on 'the forest'.

5. The army has been infiltrated by their enemies.
6. The pride has been infiltrated by their enemies.
7. The forest has been infiltrated by their enemies.

Given the variety in the behavior of collective nouns, giving a wholly unified semantics is not possible. Here I examine only collective nouns for organized groups of humans like *team*, *committee*, *court*, *club* and *army*. When I use the expression "collective nouns" here I mean for it to pick out only this limited class of expressions.

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[1] See Levin (2001) for an example of such a study and for references to other studies.
[2] If exceptions are allowed, the proportion of exceptions is likely to vary with subject expression, predicate and context. For discussions of the possibility of exceptions see Dowty (1986) and Brisson (2003).

I. Three Sorts of Predication

Collective nouns, like plural expressions, can serve as arguments in instances of distributive and collective predication. Take the following sentences:

8. The students ate lunch in the park earlier today.
9. The committee ate lunch in the park earlier today.
10. The judges gathered in the hall.
11. The Supreme Court gathered in the hall.

The predication in 8 and 9 is naturally taken to be distributive. Distributive instances of predication involve distributive entailments. For example, the truth of 9 entails that each (or most) of the members of the committee ate lunch in the park.[2] In contrast, the predication in 10 and 11 is naturally taken to be collective. In 10 the predicate applies to the judges taken together. Similarly it applies to the Supreme Court Justices taken together in 11. Both fail to entail that each judge or Justice gathered. More generally, collective instances of predication fail to have distributive entailments.

Some predicates, which I'll call 'mixed predicates', allow for both distributive and collective interpretations. For example 12 and 13:

12. The students carried the table down the hall.
13. The bags weigh 300 pounds.

While 12 is naturally understood as involving collective predication, a distributive use becomes salient in the right context. For example, suppose that one is told about a competition that involves one person carrying a table down the hall, hopping onto a chair and then running back down the hall to the finish line. In the context of discussing the competition, an utterance of 12 would naturally be interpreted as saying that each of the students carried the table down the hall. On a distributive interpretation 13 means that each of the bags weighs 300 pounds. When *weigh 300 pounds* is interpreted collectively, the truth of 13 requires that the bags weigh 300 pounds when put on the scale together.

Since the predicates *carried the table down the hall* and *weigh 300 pounds* allow for distributive or collective interpretations when combined with plural expressions, it would

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[2] If exceptions are allowed, the proportion of exceptions is likely to vary with subject expression, predicate and context. For discussions of the possibility of exceptions see Dowty (1986) and Brisson (2003).

be natural for them to allow both interpretations when combined with collective nouns. However, collective nouns force collective interpretations.[3] Take the following:

> 14. The committee carried the table down the hall.
> 15. The team weighs 300 pounds.

The collective interpretations of both are clear. To try to force a distributive interpretation, let's build up a context that would make it natural. Again, suppose we're imagining a competition that involves individuals carrying a table down the hall. 14 is uttered. Even though a distributive interpretation is salient when 12 was uttered in this context, it is not available for 14. Suppose that we are told that there are very large players on some football team. Then, 15 is uttered. Even in this context, one cannot understand 15 as meaning that each of the players on the team weighs 300 pounds. Instead, one might assume that the team has only a single member or that the team is made up of quite large 3rd graders.[4] Collective nouns only allow for collective interpretations when combined with mixed predicates.

In addition to entailment differences, predicates that are distributive, collective or mixed can also be distinguished by syntactic behavior. Thus far I have framed issues of distributivity and collectivity in terms of instances of predication being distributive or collective. However, many[5] linguists and philosophers have taken predicates themselves to be lexically marked as distributive, collective or mixed. I will adopt that convention here. Some have argued that distributive and collective interpretations are available for all predicates given the right context.[6] For example, the predicate *eat lunch* is typically classified as distributive. However, suppose that we learn that there are aliens that eat in

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[3] Moltmann (1997, 2005) and Schwarzschild (1996) also make this point. Although, they both claim that this shows that collective nouns do not allow for any distributive readings. See, e.g., Moltmann (2005, 763) and Schwarzschild (1996, 181). We, however, have seen that the collective nouns under investigation here do allow for distributive interpretations when combined with distributive predicates.

[4] When collective nouns are pluralized (as in 'the teams') the predicates in 14 and 15 allow for both distributive and collective interpretations. However, that is due to the subject expression being a plural expression, rather than it being a collective noun. There is also the possibility of what are sometimes called cumulative readings (following Scha (1981), who initially discussed these interpretations) as in "Two courts wrote three decisions". The cumulative understanding of this sentence requires that combining the efforts of the two courts yields that three decisions were written. For example, one court might have written two decisions, while the other wrote one decision. Again, cumulative readings rely on plural subject and object NPs, so, while interesting, I will not assess their behavior here.

[5] For example, Link (1983), McKay (2006), Bennett (1974), Schwarzschild (1996), Scha (1981)

[6] Winter and Scha (2014), Josh Dever (pc), Marija Jankovic (pc)

the following way: one chews, another swallows, the food then is passed to a third to be digested. If one says, "the aliens ate lunch" in this context "ate lunch" appears to apply collectively. Here I will classify predicates according to how they typically apply. What counts as typical application is vague. Roughly, the idea is that predicates that almost always have distributive applications are distributive. Predicates that almost always rely on collective interpretations are collective. And, those that are split between distributive and collective interpretations (so that the predicate does not almost always apply distributively or almost always apply collectively) are mixed.

There is a syntactic difference in the behavior of distributive and mixed predicates on the one hand and that of collective predicates on the other. Distributive and mixed predicates can be combined with singular non-collective subjects, like *Meg*, while purely collective predicates (typically) cannot.[7]

> 16. Meg ate lunch in the park earlier today.
> 17. Meg carried the table down the hall.
> 18. *Meg gathered in the hall.

While 16 and 17 are felicitous, 18 is clearly marked. Even if Meg walked into the hall, this does not suffice for her to have gathered in the hall. While Meg might gather papers in the hall, this is clearly a different way of gathering than that meant in 10 and 11 (the predicate in 10 and 11 is intransitive, while that used to mean 'gathered papers' is transitive). The sense utilized in 10 and 11 typically takes only plural expressions (e.g., *the students*), mass terms (e.g., *water*) or collective nouns as subject. This gives us evidence that *gather* is a collective predicate. Other collective predicates include *meet, are even in number* and *walk together*. We've seen that there are two marks that distinguish verb phrases that are distributive, collective or mixed. The table below summarizes the findings.

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[7] There may be outlying cases that do allow for singular subjects. The singular subjects are not ordinary humans. One human does not gather or surround. Recall that I've classified predicates according to typical application. Sentences involving predicates like *gather* and *meet* are typically (in fact, almost without exception) interpreted collectively and are typically (in fact, almost without exception) infelicitous with singular NPs.

	Distributive	Distributive or Collective	Collective
Examples	'ate lunch in the park' 'is a human' 'smile'	'carried the table' 'bought a sandwich'	'met'[8] 'gathered' 'walk together'
Distributive Entailments?	Yes	Yes/No	No
Can be felicitously combined with singular (non-collective) subjects?	Yes	Yes	No

The data canvassed thus far evidences that collective nouns allow for distributive and collective predication. Next, I argue that collective nouns can combine with predicates in a third way.

Consider the following examples:

19. The Committee on Ways and Means is old. It's been around since 1789!

20. The team is large. It has over 50 players!

21. The committee was reduced in size after the government shutdown.

22. The team was founded in 1902.

19-22 involve collective nouns. In each, the predicate applies to the committee or team as a whole. While the first sentence of 19 might be used to say that the members of the Committee are old, the second sentence requires that it is the Committee itself, rather than its members, that is old. 20 is analogous. Neither is to be understood as involving an instance of distributive predication. Similarly, 21 doesn't require that any committee members lose weight. Instead, its truth requires that the committee has lost members. Finally, 22 does not require that the members of the team were founded in 1902. A person is not even the sort of thing that is founded. The predicates in 19-22 fail to have

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[8] The intransitive use of 'met' is collective in this way. For example it is infelicitous to say 'Bert met' or 'Bert met on Monday'. Instead a plural subject like 'Bert and Dante' or a collective subject like 'the committee' is required for the intransitive use of 'met'. The transitive use does not have this requirement. For, 'Bert met Dante by the train' is certainly felicitous and has a singular subject.

distributive entailments, so, in that way they pattern with instances of collective predication. Next, I argue that these instances are not collective.

The predication in 19-22 does not seem akin to paradigmatic cases of collective predication. In such cases some things together gather, surround, carry or meet. The examples above seems akin to ordinary singular predication. Predication in which *an entity* has a feature. So far this is to appeal to intuitions about how one might naturally classify instances of predication. Syntactic tests offer further justification for the claim that the predication in 19-22 is not collective.

We saw that collective predicates cannot be combined with ordinary singular subject expressions like 'the girl' or 'Meg'. The predicates used in 19-22 can be combined with ordinary singular subject expressions.

23.   Michael Caine is old.
24.   That Sumo wrestler is large.
25.   The budget was reduced in size after the government shutdown.
26.   London was founded in 43 AD.

Since 23-26 are felicitous, we have some evidence that these predicates are neither strictly distributive nor strictly collective, but instead allow for both sorts of interpretations. However, we saw above that collective nouns combined so-called mixed predicates, only have collective interpretations. Given this, we should expect the predicates, if correctly classified as mixed predicates, to (a) only allow for collective predication with collective nouns and (b) to allow for both with plural expressions. I offered some evidence based on intuitive classificatory schemes against (a). I now turn to evidence (b).

The predicates that are standardly classified as mixed, predicates like *carried a table* and *brought an apple*, allow for both distributive and collective interpretations with plural expressions. In contrast, when the predicates in 19-22 are combined with plural expressions only a distributive reading is available. For example,

27.   The students are old.
28.   The dancers are large.
29.   The students were reduced in size.
30.   The cities were founded in 1902.

27 cannot be understood to mean that together the students are old. Similarly, the truth of 28 requires that the dancers as individuals are large. 29 requires that each student[9] was reduced in size, perhaps due to cutting the school lunch program. Finally, 30 requires that each city was founded in 1902. Further, two discussions in the literature on plurals also tell against classifying the predication in 19-22 as collective and justify classifying them as applying to groups-as-one.

Schwarzschild (2011) calls predicates like *heavy*, *large* and *round* "stubbornly distributive predicates". He defines such predicates as predicates that apply only to singularities. The predicates in 19-22 appear to only apply to singularities as well. When combined with plural expressions the predicates in 19-22 only have distributive readings. When combined with collective nouns those in 19 and 20 could apply to the individual committee or team members (if the second sentences were omitted) or to the committee as one or the team as one. Both a member of a committee and a committee itself are naturally understood to be singularities. In this way *old* and *large* fit with Schwarzschild's definition. When combined with collective nouns the predicates in 21 and 22 only apply to the committee or team as one; they fail to have what I have been calling "distributive interpretations". Nevertheless, since the team as one and committee as one are naturally taken to be singularities, the definition fits.

Second, Winter (2002) divides predicates into classes that he calls "set predicates" and "atom predicates". Set predicates take sets as arguments, while atom predicates take individuals/singularities/atoms as argument. To test for whether a predicate is an atom or set predicate he appeals to acceptability and equivalence judgments. A predicate is a set predicate if the sentences corresponding sentences in 31a and 31b differ in acceptability or truth conditions. A predicate is an atom predicate if the corresponding sentences in 31a and 31b are equally acceptable and if acceptable, truth-conditionally equivalent.

31a. All the/no/at least two/many   students/teams PREDICATE.

31b. Every/no/more than one/many a student/team PREDICATE.

According to the classification schema the predicates in 19-22 are all classified as atom predicates. For example, both "all the teams were founded in 1902" and "every team was founded in 1902" are acceptable. Further, they are truth-conditionally equivalent. Given

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[9] Or most. See fn. 2 for citations for articles that discuss exceptions.

this (and the behavior on the other corresponding pairs of sentences) *founded in 1902* is classified as an atom predicate. The other predicates behave in the same way.

The predicates in 19-22 are not neatly classified as distributive, collective or mixed. Given this and the way the predicates fit with Schwarzschild's and Winter's classifications we have evidence that the predicates in 19-22 apply to groups as wholes or atomic entities, groups that are, in some sense, independent from their members. It seems to be a group-as-one that is said to have changed in size, to have been founded at a particular time, or to be old. It seems that a group that is, in some sense, distinct from its members is the argument of the predicates 19-22, whereas the members are involved in the predication in the earlier examples (e.g., 8 and 9). We might call the group that is distinct from its members a group-as-one and the group's members a group-as-many. Both the group-as-one and the group-as-many are relevant to account for the predication of collective nouns. Given this, it would be natural to hold that collective nouns have multiple meanings. They have both a group-as-one and a group-as-many meaning. In the next section I briefly canvass additional data involving agreement possibilities that supports this view.

II. Agreement Behavior

Some have classified collective nouns as expressions that allow for singular and plural verb or pronoun agreement. Consider the following sentences.

32. The team is/are old.
33. The committee plans/plan to have a benefit in June.

American English speakers take the sentences with singular agreement to be acceptable, while many take those with plural agreement to be ungrammatical. British English speakers take both forms of 32 and 33 to be grammatical. British English allows for singular collective nouns to be felicitously combined with singular or plural verb phrases. The variation in agreement corresponds to a variation in the interpretations the sentences are given. For example, 'the team are old' is said to only have the interpretation that the team members are old while 'the team is old' has an interpretation on which the team was formed long ago and an interpretation that means that the individual members are

old. In British English the choice of verb number can constrain the interpretation of the predication.[10]

All English dialects allow for what appears to be both singular and plural agreement by unbound pronouns. Take the following:

> 34. The Supreme Court is in session. It/They will likely rule on same-sex marriage today.

The agreement in between *the Supreme Court* and the singular pronoun is easy to capture, as *the Supreme Court* is syntactically singular. The use of 'they' clearly refers to the Supreme Court justices. Even though the justices have not been explicitly mentioned, one might take this use of they to be an anaphoric rather than, say, a deictic use or one requiring a pragmatic reconstruction. Such a treatment would allow for an easy explanation of the accessibility of the interpretation. Since 34 with either a singular or a plural pronoun is acceptable in British and American English, we have evidence that singular and plural agreement are possible in both dialects. However, as the use of 'they' is unbound an alternative non-semantic explanation might be offered. To find more solid evidence for the possibility of singular and plural agreement, we might look for a bound use of a pronoun. Cases of possessive and reflexive pronouns offer such evidence. The following sentences have occurrences of bound possessive pronouns:

> 35. After every game, the winning team dumps Gatorade on its/their coach.

Since (i) the verb is singular, (ii) the pronoun is contained within the same clause as the verb and (iii) the collective noun on which both are dependent is singular, one would expect the singular possessive pronoun to be acceptable and the plural pronoun to be unacceptable or marginal. However, in an informal poll of native American English speakers the plural pronoun was taken to be as good or better than the singular pronoun.

When collective nouns are embedded in conditionals singular and plural agreement with a single token is also possible. For example:

> 36. If a team has the worst record, **its/their** MVP isn't helping enough.

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[10] This is not the strong claim that it always affects the semantic interpretation, but the weaker claim that it can.

37. Inspections may come sooner if a department indicates that **it is/they are** ready for evaluation.[11]

Given that the extensions of the pronouns in the consequents vary with the choice of a particular team or department in the antecedent, there must be a connection between the collection as one and as many. It is plausible that the pronouns in the consequent are somehow semantically bound by the collective nouns in the antecedents. If this is correct, singular and plural agreement are again shown to be possible.

Here we are interested in the semantics of collective nouns. Agreement is sometimes taken to be a syntactic, rather than semantic phenomena. There are two reasons to think that an at least partially semantic account of agreement is needed to account for the range of data canvassed in this section. First, we saw that in British English the difference between a verb phrase with singular and with plural number marking affects semantic interpretations. For example, 'the team **is** old' and 'the team **are** old' are usually taken to mean different things or at least the former has two interpretations while the latter has one (or one that is strongly preferred). An at least partially semantic account of agreement can explain the effect agreement has on semantics. Further, as noted earlier, collective nouns that pick out collections of animate entities have different patterns of agreement behavior than those that pick out collections of inanimate entities. For example, while the sentences with plural pronouns above are felicitous the following sentences involving collective nouns for collections of non-animate entities are marginal at best:

38. *?This pack can be smoked in two minutes. **They** are short.
39. *?The deck is old, so I'll press **them** under a large book.

Schwarzschild states that "the fact that the rules for number agreement are sensitive to animacy lends support to a semantic or partially semantic theory of agreement" (1996, 177). Agreement affects semantic interpretations and the agreement options available are partially determined by semantic features of particular collective nouns (e.g., animacy). Given these considerations and the fact that collective nouns allow for both singular and plural agreement, we have further evidence that collective nouns have both a group-as-one and a group-as-many meaning. Here I do not have the space to look more closely at

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[11] Found via a Google search on the website of Wayne Goodwin, State Fire Marshal of North Carolina (http://www.ncdoi.com/OSFM/RI/ri_faq.asp)

agreement behavior and to formulate a theory of agreement or a theory of how agreement and predication data are to be combined. This section is merely meant to serve as additional evidence that collective nouns have a group-as-one and a group-as-many meaning. In addition to predication relying on groups as wholes and group members, agreement appears to rely on both.

Expressions with multiple meanings are often taken to be ambiguous. If collective nouns have multiple meanings, it would be prima facie natural to suppose that collective nouns are ambiguous. Such views have been argued for. Schwarzschild (1996) has suggested that collective nouns in British English are ambiguous between a plural and a singular denotation. Suerland and Elbourne (2002) have argued that collective nouns in British English are semantically plural while those in American English are semantically singular. However, given that collective nouns in both dialects (1) allow for predication that appears to be of a group-as-one and a group-as-many and (2) allow for plural and singular pronominal agreement, we have some evidence that a group-as-one and group-as-many meaning are available in both dialects. Another way for an expression to have multiple meanings is for it to be polysemous. In the next section I characterize the distinction between ambiguity and polysemy. I argue that the behavior of collective nouns patterns with that of polysemes. So, collective nouns are polysemous.

III.   Ambiguity and Polysemy

Bank is ambiguous between a 'financial institution' meaning and a 'piece of land abutting a river' meaning. One might think *newspaper* is ambiguous between a material object (e.g., that newspaper lying on the desk) and an institution (e.g., The New York Times). While each of these cases involves a distinction in meaning or what has sometimes been called an ambiguity, they are different. The two senses of *bank* are not closely related; the senses of *newspaper* are closely related. To capture this difference, the first case could be taken to be a case of ambiguity, while the second could be taken to be a case of polysemy. Of course, for an additional label to be helpful, there must be a distinction between what counts as an ambiguous expression and what counts as a polysemous expression.

Ambiguous expressions (or homonyms) are distinct expressions that are written and pronounced identically, but which differ in meaning. Polysemy can be characterized

in two general ways. First it might be taken to be a case of homonymy in which the homonyms have closely related meanings. On this view there is no substantial difference between homonymy and polysemy and adding a second label would be gratuitous. Alternatively, polysemy can be understood as involving a single word with more than one meaning. On this view, homonymy and polysemy are differentiated by the number of words involved and the number of meanings assigned to a word. Homonymy involves multiple expressions, each with a single meaning, while polysemy involves a single expression with multiple meanings.

Polysemy, however it is understood, requires that a polyseme's meanings be closely related. Pustejovsky (1995) classified a number of ways in which distinct polysemous meanings might be related for example:

> Animal/Meat
> a. John bought a pet lamb
> b. Sam ordered lamb for dinner[12]
>
> Container/Contents
> a. Sam bought a bottle of wine.
> b. He drank two bottles
>
> Producer/Product
> a. The newspaper is poorly run.
> b. This newspaper is from last Sunday.
>
> Ground/Figure
> a. The door is open
> b. The door made of wood

The meaning relations between, for example, animal and meat are fairly, but not wholly, general. That is, while *lamb* has an animal and a meat meaning, *cow* has only the animal meaning. However, even given the normal meaning of *cow*, utterances involving it that seem to require the meat reading are intelligible. For example take the following:

> 40. The wolves broke through the fence surrounding the ranch. They feasted on cow that night.

While the second sentence in 40 is slightly odd, context makes its meaning clear. In this way, polysemy is fairly general across a category (e.g., across the category of animals or

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[12] These related meanings hold for many but not all words. For example, while 'lamb' can shift between an animal and a meat reading, 'cow' cannot. 'Cow' only has the animal reading. These patterns are meant to be somewhat general, but not wholly general.

containers). This marks a difference between ambiguous expressions like 'bank' and other expressions with multiple meanings like 'bottle.' Next I examine the behavior of homonyms and polysemes on two of Zwicky and Sadock's (1975) ambiguity tests to argue that polysemy is not just a special case of ambiguity.[13]

The Contradiction Test appeals to examples roughly of the form ⌜that's an F, not an F⌝. If the sentence has a reading on which it is not contradictory, F tests positive for ambiguity. If the only reading is contradictory, F does not test positive for ambiguity. Let's apply this to a case of homonymy and a case of polysemy.

41. That's a bank, not a bank.

42. That's a bat, not a bat.

43. *That's a window, not a window.

44. *That's a bottle, not a bottle.

Non-contradictory readings of 41 and 42 are salient, especially with the right tonal emphasis. There are, however, no non-contradictory readings of 43 and 44. This marks a difference between homonymy and polysemy. Homonyms test positive for ambiguity on the Contradiction Test, polysemes do not.

Collective nouns pattern with polysemes on the Contradiction Test. Sentences like the following do not have non-contradictory interpretations.

45. *That's a team, not a team.

46. *That's a committee, not a committee.

Since *that* is singular, it is not surprising that 45 and 46 involve contradictions. The singular 'that' might seem to require that the team or committee as one is picked out.[14] However, if it is correct that distributive predicates applied to collective nouns apply to the members that make up the collective (i.e., a collection as many) grammatical singularity can not always require that the entity that is one is selected. For, distributive predicates can apply to collective nouns that are grammatically singular. This delivers some evidence that collective nouns are not ambiguous. Next let's examine a second ambiguity test in the hopes that it offers more solid evidence.

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[13] While Zwicky and Sadock (1975) go through more tests, the two I discuss here seem most applicable and seem to draw out the distinction between homonymy and polysemy best.

[14] Thanks to [OMITTED FOR REVIEW] for bringing this point to my attention.

Identity Tests rely on a sentence in which a single use of a potentially ambiguous term is predicated in two ways or of two things or is said to have been carried out by two parties. If the expression is ambiguous it will not allow for "mixed" readings. For example, take the following:

47. I saw her duck and so did Bert.

48. The bank is where I keep my money and go to relax.

49. The newspaper's format was changed when it was sold.

50. We are safe! The door is closed and is made of solid oak.

47 and 48 include instances of *duck* and *bank*, signs that are taken to encode homonyms. 49 and 50 include instances of *newspaper* and *door*, words that are taken to be polysemous. In 47 and 48 only one understanding or disambiguation of *duck* and *bank* is possible. For example, it is not possible to understand 48 as meaning that I keep my money in a financial institution and go to the side of the East River to relax. Instead, it must mean either that I relax and keep my money at a financial institution or that I do both at the side of a river. On the other hand, 49 and 50 rely on mixed understandings of *newspaper* and *door*. In 49, *newspaper* is used to refer to a published product and to a publishing company. In 50, *door* is used to refer to an aperture and to the piece of material that covers an aperture.

A token of a polyseme having two semantic interpretations is even more common in instances in which pronouns are used. For example

51. After drinking the entire bottle of beer, Anne recycled it.

52. Anne broke the window and then climbed through it.

In 51 and 52 different meanings of *bottle* and *window* are relied on in their first instance than use of the anaphoric pronoun. Yet, both sentences are natural and are not comedic or difficult to interpret. In contrast, pronouns dependent on homonyms must be interpreted as having the same meaning as that had by the token of the homonym. Take the following example:

53. I saw her duck and Bert saw it too.

In 53 *duck* and *it* can either both be interpreted as referencing an aquatic bird or as both referencing a specific action. Cases involving homonyms and those involving polysemes

behave differently on the Identity Test. It is possible to get mixed readings for polysemes, but not for homonyms.[15]

Collective nouns pattern with polysemes in allowing for mixed interpretations. We saw that a single token of a collective noun allows for singular and plural agreement. While I do not claim that agreement is to be explained wholly in terms of semantics, we have evidence that agreement is to be accounted for partially in terms of semantics. If the semantic aspect of agreement were handled by positing that collective nouns are ambiguous between an expression with a group-as-one meaning and an expression with a group-as-many meaning, the availability of mixed (semantic) agreement would not be possible. Further examples show that a token of a collective noun can be combined with predicates that seem to take groups-as-one as argument and those that seem to take groups-as-many as argument. For example:

54. The team scored 100 points in last night's game. That's more than it has scored since it was founded in 2001.

55. The committee has continued to grow and is now so large that this month they had to meet in a lecture hall.

In 54 *team* is combined with predicates in a way that relies on both a group-as-many and a group-as-one denotation. The team-as-many are said to have (probably collectively) scored 100 points in a game. Then the team-as-one is said to have been founded in 2001. Similarly in 55, the committee-as-one is said to have grown and to be large. The committee-as-many is then said to have collectively met in a lecture hall. Collective nouns, like polysemes, allow both group-as-one and group-as-many meanings with a single token or a token and an anaphoric pronoun. They fail to test positive for ambiguity using the Identity Test. Instead they pattern with polysemes.

We have evidence that collective nouns have multiple meanings given their predication and agreement behavior. In this section we saw that polysemes and

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[15] The example sentences used here show that there are cases in which mixed interpretations of a polyseme are *possible*. Homonymous expressions never allow for mixed interpretations. There are some sentences with what I have classified as polysemes in which a mixed interpretation sounds odd or humorous. For example, there is something odd with the following: 'Harry Potter and the Deathly Hollows sold 11 million copies and is sitting on the sofa'. Similarly, it is difficult to get a non-comical interpretation of the following sentence in which one of us want the committee to have many members and the other wants the members to by tall: 'I want the committee to be big and John does too'. Here, I categorize polysemes as expressions with multiple meanings that can allow for mixed interpretations, while expressions with multiple meanings that never allow for non-zeugmatic mixed interpretations are categorized as homonymous. I thank [OMITTED] for stressing this point.

homonyms behave differently on the Contradiction Test and Identity Test. I have argued that the collective nouns of interest here (those for organized groups of humans) pattern with polysemes. They should be taken to be polysemous expressions with group-as-one and group-as-many meanings. Next, I turn to a brief examination of the metaphysics of the denotations of collective nouns.

IV. A Bit of Metaphysics

The informal semantic discussion so far gives evidence that the denotations of noun phrases like *the team* and *that club* are two-fold; they denote both a collection and many individuals. The collection is a whole. It might, following Link (1983), Landman (1989) and Barker (1992), be called an atom. The many individuals are not one but are many. They might be modeled as many individuals that are not summed as proponents of plural logic suggest[16] or as a sum or set that is distinguished from atomic entities like groups-as-one and that car outside my window.[17]

In this section I consider metaphysical issues that will inform the semantic theory I sketch in the next section. There are two features of groups that are important for our discussion. First, groups can change member across times and worlds. The House of Representatives used to have different members than it currently does. The Senate might have different members than it actually does. Call this feature *Membership Variety*. Second, the same individuals might make up more than one group. For example, the individuals who are currently members of the Supreme Court could also form a dodge ball team. Even though the members of both are (currently) the same, the two groups are distinct. Further, the same individuals might make up multiple groups of the same kind. For example, some individuals might make up two committees, one that oversees a corporation's budget and another that recommends community outreach programs. Even though they have the same members and are both committees, they are distinct. Call this feature N*on-Identical Coincidents*.

In order to capture these features I argued in (OMITTED) for a view on which groups-as-one are realizations of structures and groups-as-many are the entities that take

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[16] See, e.g., Boolos (1984), Oliver and Smiley (2001) and (2013), McKay (2006), Yi (2005) and (2006), Schein (1993), Nicolas (2005)

[17] See, e.g., Link (1983), Landman (1989a and 1989b)

part in realizing the structure. In recasting the view here, I think will talk of groups-as-one as structured wholes and groups-as-many as the individuals that make up a group-as-one at a time and world. The view sketched here has similarities with views developed by Fine (1999), Moltmann (2005) and Koslicki (2008). Each develops a metaphysical view on which identity and persistence conditions rely on both structure and substance. Since our primary aim here is giving an account of the semantics of collective nouns, the variations between views will not be explicated. Instead, here I will briefly discuss group structures and the way group structures relate to groups-as-one and groups-as-many.

The structure of a group captures the group's functional organization. It can be represented with nodes[18] and edges connecting them. The edges of a structure capture the relations that hold between nodes. The relations are largely functional. The relations might be hierarchical or non-hierarchical. Hierarchical relations capture power relations, like a club's treasurer reporting to a club's president. Many relations are non-hierarchical. For instance, in the baseball team structure the node labeled 'pitcher' is related to that labeled 'catcher' by the pitch-ball-to relation. Together, the connections between nodes capture the function of the group.[19]

When a group exists it has both a structure and some members which occupy the nodes in the structure. Some things are members of group G with structure S at time t and world w just in case they jointly realize S. Some things jointly realize a structure if, and only if, each occupies a node (or some nodes) in the structure and every node in the structure is occupied by one or more of the things. To occupy a node is to stand in the relations required by the node. It is only through the efforts of the many members of a group that all of the nodes in the structure are filled and that the structure of the group is realized.

Once a group structure is realized a group, G, exists. The persistence of G requires the continuity of the realization of S. That is, occupiers of the nodes of S which form the realization of group G (i.e., members of G) must continue to bear the

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[18] Shapiro (1997) calls these 'places'.

[19] There are some complications here as a group's function might not be wholly captured by its structure, but may rely on relations to the structures of other groups. For example, the functions of the Senate and the House are interrelated. I abstract away from these complications here.

functional relations required for a realization of S.[20] Persistence of G allows for alterations in members given the following understanding of group membership:

> Some thing, x, is a member of group G with structure S at time t and world w if, and only if, x occupies a node(s)[21] of S at t at w

If something, x, comes to occupy a node in S at t' and at w, it is then related to other occupiers of nodes of S in its realization as group G and is a member of G at t' at w. If something, y, which was a member of G at t at w, fails at time t' to bear functional relations (in the ways required by S) to other occupiers of nodes of S, y ceases to be a member of G at t' at w. *Membership Variety* is met.

The identity of a group-as-one can be defined as:

(IDENTITY) A group G_1 and a group G_2 are identical iff
   (1) for all t and all w, the structure of G_1 at t at w is identical to the structure of G_2 at t at w, and
   (2) for all t and all w and all x, x occupies node n in the structure of G_1 at t at w if, and only if, x occupies n in the structure of G_2 at t at w.

The individuals who occupy the nodes of a group's structure at a time and world are the group-as-many at that time and world. The same individuals might occupy all the nodes in more than one realization of a group structure. IDENTITY requires that groups-as-one are identical only if they co-vary in members and structure across times and worlds. Given this multiple groups-as-one remain distinct even if they have all the same members at some time and world. *Non-Identical Coincidents* is met.

On this picture, groups-as-many are just some individuals. They are extensional entities. Something is an **extensional entity** just in case its identity or persistence conditions depend only on the thing's material stuff or parts. In contrast, groups-as-one are structured wholes or structured entities. Something is a **structured entity** just in case its identity or persistence conditions do not depend only on the thing's material stuff or parts, but also on how the stuff or parts are structurally-functionally related. The persistence and identity conditions of groups-as-one rely on structural elements.

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[20] Groups seem to allow for change in functional organization. For example, a committee might add a treasurer or a baseball team might add a designated hitter. To allow for change, a group structure needs to be the sort of thing that can persist through some changes. It is beyond the scope of this paper to develop an account of the persistence conditions of group structures.

[21] Occupying a node requires that it is functionally related in the ways required by S to other occupiers of nodes in S of G at t at w.

Koslicki (2008) calls such elements "formal components." Fine argues that there is "an intensional or conceptual element to the identity of many material objects" (1999, 73). His variable embodiments, like what I have called realizations of structures or groups-as-one, rely on function principles "which are intensional or conceptual in nature [and] are directly implicated in the identity of the embodiments and hence also in the identity of the material things that are explained by their means" (1999, 73). The identity conditions of groups-as-one rely on something in addition to a group-as-one's material parts (i.e., their members).

      The metaphysics of groups given here can be put to use to capture the variety of predication and agreement behavior of collective nouns. In the next section I begin by building up a domain of denotations for collective nouns and specifying a function (or relation) between the groups-as-one and groups-as-many. I sketch a semantics of collective nouns that combines insights from the discussion of the metaphysics of groups with the availability of multiple denotations and the features of a variety of predicates.

V. Semantics of Collective Nouns

      There are two general ways to formally capture the connection between a group-as-one and its various groups-as-many. On the first, there is a function for each group-as-one from world-time pairs (or indices) to groups-as-many. Since functions are required to be one-to-one, proponents of plural logic will not want to adopt the use of a function. For utilizing a function would require that both groups-as-one and groups-as-many are entities. As an alternative, if one prefers to take groups-as-many to be strictly many a one-many relation can be substituted for the function. On this option, each group-as-one specifies a relation that, for every index, relates some things to it. *Membership Variety* is captured with either the function or relation approach, as groups-as-one can be associated with distinct groups-as-many across worlds and times. Let's look at an example.

      Suppose that Committee A has structure S. As a group-as-one Committee A is a whole structured by S and composed of a variety of material parts across times and worlds. Suppose that at world w_1 Committee A has the following members at times t_1-t_3:

      t1:   Farrah, Sue, Lana, James, Chris

      t2:   Farrah, Sue, James, Chris

t3:   Farrah, James, Chris, Amy

On the function approach, there is a function f_{CA} that takes an index and returns a group-as-many. The group-as-many could be modeled as a set or a sum. For example if groups-as-many are modeled as sets, $f_{CA}(<w1, t1>) = \{f, s, l, j, c\}$. If modeled as sums $f_{CA}(<w1, t1>) = f+s+l+j+c$. If one prefers groups-as-many to be strictly many a relations R_{CA} relates each index to members of Committee A at that index. For example R_{CA} relates $<w1, t2>$ to Farrah, Sue, James and Chris as many individuals.

There is no function or relation associated with a group-as-many. There are two reasons for this. First, the function associated with a group-as-one is dependent on the group's structure. The group structure is built into the group-as-one in virtue of it being a structured whole. This explains why there is a function associated with a group-as-one. Groups-as-many are not structured. They have no structure to explain why a certain group-as-one would be returned for a given index.

Second, some individuals might constitute multiple groups-as-many. That is, some individuals might be all and only the members of two distinct groups. The *Non-Identical Coincidents* condition captures this possibility. In addition, some individuals might not ever be all and only the members of a group. For example, there might be no time or world where I am a member of a structurally-functionally organized group along with Napoleon, Barack Obama, Madame Curie and Ruth Bader Ginsberg. So, groups-as-many do not have associated functions that return groups-as-one. Next let's turn to applying predicates to collective nouns.

I argued in *Section I* that collective nouns can be combined with predicates in three ways—distributively, collectively and as a group-as-one. When a collective noun is the argument in an instance of distributive predication, the predicate applies to the group-as-many. When a predicate marked as distributive applies to a group-as-many it distributes to the parts of the group-as-many. For example, if a group-as-many is Anne, Bob and Scott (or the set containing just those individuals or the sum with just those individuals as atomic parts), a predicate applied to the group as many applies to Bob and to Anne and to Scott. Since the group-as-many picked out by a collective noun varies across times and worlds, truth conditions vary across times and worlds. A world and a time are specified by the context of utterance. Unless a modal operator is employed, the world is likely the actual world. The time is determined by the present context and tense

markers. For example in 56 a collective noun is the argument in an instance of distributive predication.

> 56. The Committee on Ways and Means is eating lunch in the park.

The Committee on Ways and Means is a proper name. It denotes a group-as-one and a group-as-many. The way 56 is formalized captures the polysemy of the expression. This is required as there will be cases in which a single token of a polyseme is interpreted in multiple ways due to distinct predication or, possibly, agreement behavior. To represent the semantic values of collective nouns I will employ dot objects, loosely following Pustejovsky's (1995) notion and formalism, although the specifics of his view won't be relied on here.[22] A token of a collective noun has a semantic value of the following type: group_as_one•group_as_many. Formalizations of sentences involving collective nouns always have dotted meanings. One or the other semantic value is then selected for given predicate use or, possibly, numerical agreement. The semantics of 56 can be given by 56'.

> 56'. ^{D}Eating_Lunch(group$_{CWM}$_as_one•group$_{CWM}$_as_many)

The predicate *eating lunch in the park* is distributive. This can be marked by a superscripted 'D'. Distributive predicates apply to the groups-as-many rather than groups-as-one. What group-as-many is picked out by the collective noun depends on the world and time. We can assume the world is the actual world. Since the predicate is in present tense, the group-as-many picked out is that for the time of utterance. Given the index, a group-as-many is specified by the function or relation associated with the structure of group-as-one. Suppose that the individuals who are members of the Committee on Ways and Means at the time of utterance at the actual world are a, b, c and d. Then, the truth of 56 requires that a is eating lunch in the park, b is eating lunch in the park and so on. As noted above, groups-as-many could be modeled as sets, sums or non-singular pluralities. To give a slightly more formally representation of 56 I will adopt the set representation. Given the world and time selected the truth of 61 depends on the truth of 56".

> 56". ^{D}Eating_Lunch(f$_{CWM}$(w$_@$, t$_U$))

Here w$_@$ denotes the actual world and t$_U$ denotes the time of utterance in the given example, 56" is equivalent to 56"'.

> 56"'. ^{D}Eating_Lunch({a, b, c, d})

For any distributive predicate, ^{D}P, the following distributivity condition holds:

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[22] If one prefers, a doubleton or ordered pair could be utilized, rather than a dot object.

$$(\text{DIST}) \quad {}^{\text{D}}P \text{ is true of a set S iff } \forall x \, (x \in S \rightarrow P(x))[23]$$

Given that *eating lunch* is a distributive predicate, it is true of {a, b, c, d} just in case it is true of each of a, b, c and d. Given this, 56 and 57 jointly entail 58.

      57. Alice is a member of the Committee on Ways and Means.

      58. Alice is eating lunch in the park.

Here 57 must be interpreted using the same index. So that it means that Alice is a member of the Committee on Ways and Means at $w_@$ and at the same time of utterance used to evaluate 56. Sentence 56 also entails 59 (when the same index is used in evaluating both).

      59. The members of the Committee on Ways and Means are eating lunch
          in the park.

The denotation of *the members of the Committee on Ways and Means* given the situation described is {a, b, c, d}. So, in the context, 59 is equivalent to 56'''. Since 56', which is the formalization of 56, entails 56''' it entails 59. Finally, 56 and 60 jointly entail 61.

      60. The members of the Committee on Ways and Means are all and only
          the members of the NYC Chess Club.

      61. The members of the NYC Chess Club are eating lunch in the park.

Since the semantics for 56 is that given in 56', 62 is not entailed.

      62. The NYC Chess Club is eating lunch in the park.

The semantics for 62 requires the dot object $\text{group}_{\text{NYCCC}}\_\text{as}\_\text{one} \bullet \text{group}_{\text{NYCCC}}\_\text{as}\_\text{many}$ to be the argument of the predicate. While the truth of 62 requires that the predication is of the a group-as-many, 62 itself is not equivalent to a sentence that involves only a group-as-many. Polysemes do not lose meanings, although predicates might utilize one or another meaning. Sentence 62 is not equivalent 56 and in the semantics being developed there is no way to move from a group-as-many or a plural subject being the argument of a predicate, to a dotted object being the argument of the predicate. The semantics informally sketched here can capture the intuitive entailments of 56. There are other entailments that hold given the semantics being sketched here and the Cumulative Reference Property.

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[23] It has been noticed that distributive predication allows for exceptions. For example, it is judged that a sentence like 'The students fell asleep' can be true even if 19 of the 20 students fell asleep. If this is general, this condition could be altered to include a non-maximal quantifier, perhaps one that is context sensitive.

The Cumulative Reference Property (CRP) was first discussed in the context of plurals by Link (1983).[24] It is usually taken to hold for any distributive predicate.[25] It can be informally given as follows, where X and Y are plural variables that stand for one or more individuals:

$$(\text{CRP}) \quad {}^{D}P(X) \, \& \, {}^{D}P(Y) \rightarrow {}^{D}P(X \, \& \, Y)$$

An instance of the property applies to a case like that above. Suppose that Alice, Bob, Carla and Dan are all and only the actual current members of the Committee on Ways and Means. Then, given CRP, 63 and 58 (repeated below), 56''' (repeated below) is entailed.[26]

> 63. Bob, Carla and Dan are eating lunch in the park.
>
> 58. Alice is eating lunch in the park.
>
> 56'''. ^{D}Eating_Lunch({a, b, c, d})

Further, we saw that given the context, 56''' gives the semantics for 59. So that the members of the Committee on Ways and Means are eating lunch in the park is also entailed. However, 56''' fails to entail 56. The semantics of 56 is that represented in 56'. To reiterate, polysemes do not lose meanings. The suspect inference from Alice, Bob, Carla and Dan are eating lunch in the park to the Committee on Ways and Means is eating lunch in the park is not delivered, given the semantics developed here. This is as it should be, for it would be strange to describe a situation in which Alice is eating lunch in New York, Bob and Carla are eating lunch in Dubai and Dan is eating lunch in Mexico City as a situation in which the Committee is eating lunch.[27] Next I turn to collective predication.

Collective predicates are handled in two ways according to whether they rely on an only extensional aspects of an entity (i.e., just matter/substance) or not. I call collective predicates that rely on only the material or extensional aspects of an entity **extensional collective predicates**. I call collective predicates that can rely on both extensional and structural-functional aspects of an entity **structure-sensitive collective**

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[24] Although he cites Quine (1960, p. 61) as the source of the observation in discussions of mass terms.

[25] Although, see McKay (2006, 7) for arguments that some distributive predicates do not obey the CRP.

[26] Suppose that the time of utterance and contextual restrictions that might be needed to determine the denotation of 'the park' are held fixed.

[27] This also blocks inferences that Barker (1992) discussed involving entailments from some individuals dying or some individuals fathering children to the committee those individuals composed dying or fathering children.

predicates.[28] If multiple denotations are available, one of which is wholly extensional and one of which is partially non-extensional in having a structural-functional feature, extensional collective predicates will apply to the extensional denotation and structure-sensitive collective predicates will take the structured denotation as argument. Next, I look at the two sorts of collective predication applied to collective nouns.

Extensional collective predication can be handled in the same way that collective predication of plural expressions is handled. For example, extensional collective predicates like *surround the table*, *gather in the hall* and *carried a piano* are not sensitive to the organization or structure of an entity, but only to its material parts. Given this, when applied to a collective noun they select for the group-as-many denotation. Let's look at an example. Given that collective nouns are polysemous, 64 is formalized as 64'.

> 64. The Committee on Ways and Means is surrounding the table.
>
> 64'. Surrounding_the_table(group$_{CWM}$_as_one•group$_{CWM}$_as_many)

Given that *surrounds the table* is an extensional collective predicate, it selects for a group-as-many, as it is the denotation that is purely extensional. Given this, 64 entails 64" and (given the supposition that the same members of the Committee as specified in the example above) it entails 64'''.

> 64". Surrounding_the_table(f$_{CWM}$(w$_@$,t$_u$))

> 64'''. Surrounding_the_table({a, b, c, d})

Since *surrounding the table* is not marked as a distributive predicate, DIST fails to apply to it. So, while 64 entails 65, it fails to entail 66.

> 65. The members of the Committee on Ways and Means are surrounding the table.
>
> 66. Alice is surrounding the table.

Once again, inferences like those from 64 to sentences like 67 are invalid, as the semantics of 67 requires a dotted denotation that is distinct from the dotted denotation of *the NYC Chess Club*.

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[28] Note that I say "can rely on both extensional and structural-functional aspects of an entity". Such predicates might take arguments that are wholly extensional. For example they might apply to the noun phrase *Joe, Sue and Mary*. In such cases, the predicate does not apply to intensional/structural-functional aspects of the entity which is its argument as the entity has no intensional/structural-functional aspects! However, if multiple denotations are available, one of which is has structural-functional aspects, the predicate will select for that denotation.

67. The NYC Chess Club is surrounding the table.

The semantics developed thus far could also capture substitution failures in sentences that involve predicates that seem to rely on structural, functional or other intensional aspects of an entity.

In discussing the semantics of collective nouns, Landman (1989a, 1989b) focuses on cases that appeal to *Non-Identical Coincidents*. He employs cases involving the predicate *paid an official visit to South Africa*. There is, it seems, something about the role a thing plays associated with paying an official visits. Official visits are the sorts of things that entities with functional roles play. For example, the President of the US could pay an official visit to South Africa, but I as an ordinary US citizen cannot. Insofar as some individual or individuals pay an official visit, they are paying an official visit in a certain capacity. Given this, we have evidence that *paid an official visit* is a structure-sensitive predicate. Landman focuses on the following pair of examples along with the specification that the members of Committee A are all and only the members of Committee B.

68. Committee A paid an official visit to South Africa

69. Committee B paid an official visit to South Africa.

He judges that 68 and 69 could diverge in truth value. Given the semantics I've sketched, even if 68 and 69 both entail that some individuals a, b, c and d paid an official visit to South Africa, 68 fails to entail 69 and vice versa. Altering the semantics sketched thus far would not be needed. However, other cases prove more difficult, and show that structure-sensitive collective predication must be treated differently than extensional collective predication.

Barker (1992) and Schwarzschild (1996) canvass examples that prove more difficult for the treatment to handle. They argue that examples like the pairs below show that collective nouns and expressions that pick out the members of the group denoted by the collective noun cannot be substituted salve veritate. They use examples like the following in which the names listed in the *b* sentences are the names of the members of the group referenced in the *a* sentences at the time of utterance:

70. a. The team has been damaged by the scandal.

b. Dwayne, Tim and LeBron have been damaged by the scandal.

71. a. The committee first met in 1990.

b. Dwayne, Tim and LeBron first met in 1990.

They hold that the truth values for 70a and 70b and for 71a and 71b could diverge. While the semantics I've sketched so far can account for the truth of the *b* sentences and the falsity of the corresponding *a* sentences, as it has been formulated, it requires that the *a* sentences entail the corresponding *b* sentences. One might adopt a pragmatic story on which the entailments from *a* to *b* hold, and account for the apparent failure by positing something that makes it infelicitous to utter the b sentences. Alternatively, an appeal to a distinction between the way collective nouns combine with predicates that rely on only extensional aspects of an entity (or entities) and those that can rely on structural-functional aspects might be made. I'll develop an account along the second line.

If such an account is to work, the predicates in 70 and 71 must be able to rely on structural-functional aspects of their arguments (should there be such aspects). Let's examine whether they do. *Being damaged by a scandal* involves something's or someone's reputation. Reputations seem to be the sorts of things that could be sensitive to more than a thing's material parts (should it have anything in addition to material parts). A group's reputation can also persist through massive change in group membership. This gives evidence that the application of predicates like *being damaged by a scandal* can be sensitive to structural-functional aspects of entities. Since it is a group-as-one that has a non-extensional aspect and that is the structured denotation, such predicates take groups-as-one as argument when applied to collective nouns. Given that we have evidence that collective predicates involving reputation are structure-sensitive and that the predication in 71a is of the team-as-one. I will develop a semantics for structure-sensitive predication and show how predicates that take groups-as-one as argument fail to have the sorts of entailments to which Barker and Schwarzschild objected. Before turning to the semantics, let's examine the second case.

In a discussion of a case like 71, Pearson (2011) argues that *first met in 1990* is ambiguous. On one reading, it means something like 'to hold a meeting'. On the other, it means 'to become acquainted with one another'. She supports her claim by citing data that in other languages (e.g., German) the two meanings are encoded by different expressions. Given that the functional organization of committees includes holding meetings, it is likely that 71a is taken to mean that the committee first held a meeting in 1990. As holding a meeting relates to the functional-structural organization of the

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committee, it is structure-sensitive.[29] The predicate does not rely only on the material parts of the entity. So, it is the committee-as-one, the denotation of the collective noun that has a structural-functional aspect, that is predicated with this property. As individuals do not often hold meetings without doing so as part of an organization or group, 71b is naturally understood to mean that Dwayne, Tim and LeBron first became acquainted with one another in 1990, which fails to have any entailment relation with the committee first holding a meeting in 1990.[30]

I propose that in cases of structure-sensitive predication, the group-as-one is the argument of the predicate. Since a group-as-one is a structured whole with a function associated with it that delivers its associated group-as-many relative to an index, coincidence of group members at a time does not yield identity. Two groups-as-one are identical if and only if they are the same structured whole, that is, if they co-vary in structure and members across all worlds and times. Further, since a group can have different members across times, a property being had by the group-as-one fails to entail that the property is had by the group's current members.

While there might appear be something suspect or unexplained about taking some collective predicates to predicate groups-as-many and some to predicate groups-as-one, the distinction between purely extensional predicates and those that are structure-sensitive. Predicates like *surrounds the table* and *gather in the courtyard* apply to material stuff. They can be truly applied to mass nouns in addition to plurals and collective nouns. They do not rely on structural elements of an entity. In contrast, predicates like *paid an official visit*, *held a meeting* and *was damaged by the scandal* do not rely only on material stuff. An entity's structure may be relevant to whether they truly apply to it. This difference is robust and should be captured semantically.

We saw that the instances of predication discussed in *Section 1* (19-22) were semantically distinct from instances of distributive and collective predication. So, we have evidence that they have to be treated differently. I argued that they should be understood

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[29] Barker (1990) argues that predicates like *meet* are usually taken to be extensional. I agree that in the 'become acquainted with' sense *meet* is extensional, but take it that in the 'holds a meeting sense' *meets* is sensitive to function and in that way intensional.

[30] If *met* is ambiguous in the way Pearson suggests, there should be a reading of 71a which is entailed by 71b. If there is such a reading it is rather difficult to get, but that might have to do with the close association between our conceptions of committees and the holding of meetings.

as applying to groups-as-one. In examining these predicates, we will see that they are structure-sensitive. In the semantics being developed, all structure-sensitive predicates applied to collective nouns take groups-as-one as arguments, while all purely extensional predicates applied to collective nouns take groups-as-many as argument. As all predication that applies to groups-as-one is structure-sensitive, the feeling that something was suspect with drawing a division in collective predicates dissolves.

The instances of predication I argued had to be treated as distinct from instances of distributive and collective predication can be divided into the following non-exhaustive list of classes:

Size Predicates
<u>Examples:</u> 'is large', 'is small'

Size Change Predicates
<u>Examples:</u> 'is growing', 'was reduced in size' 'gained a player'

Existence Predicates
<u>Examples:</u> 'was founded', 'was chartered in 1892'

Age Predicates
<u>Examples:</u> 'is old', 'is young'

Size predicates describe states. The truth conditions they deliver when combined with a subject expression depend on how things are with the denotation of the subject expression at one time. When applied to groups-as-one they require something about the number of group members, rather than the purely extensional amount of space an entity or some entities occupy. They appeal to the number of members in a group-as-many at a time, which is determined by a function tied to the structure of the group-as-one. Size change predicates describe events. The truth conditions they deliver when combined with a subject expression rely on looking at how things are with the denotation of the subject expression across times. They rely on the gaining or losing of members, which requires using the function tied to the structure of the group-as-one. Existence predicates describe events. Their truly applying to an entity requires the entity to have come into existence or to have come into existence at some specified time. They require looking at an entity at one time. Such predicates are intensional in that the founding of a committee or chartering of a club does not require new matter to be created, but an entity with a certain kind of structure. Finally, age predicates describe states. Their truly applying to an

entity requires looking across times to when an entity first came into existence. When a group-as-one comes into existence relies on the realizing of a structure, which is an intensional features.

When a structure-sensitive predicate is applied to a collective noun, it applies to the group-as-one. A careful examination of tense, contextual effects and lexical meaning of predicates would be required to fully treat all of the cases. Here I examine one example. To determine the truth of 21, repeated below, the number of members of the committee at a time prior to the government shutdown would need to be compared to the number of members of the committee at a time after the government shut down.

21. The committee was reduced in size after the government shutdown.

Take t_2 to be the time of the government shutdown. Then the cardinality of the set returned by the function delivered by the structure of the group-as-one for some time before t_2 must be greater than the cardinality of the set returned by the same function for a time after t_2. The context and perhaps pragmatic factors will help to determine the temporal distance allowed between t_2 and the times in the indices used. To make things simpler, let's take 'the committee' to be a proper name and drop the clause 'after the government shutdown'. Then, 26 could be formalized as:

21'. Reduced_in_Size(group$_c$_as_one• group$_c$_as_many)

Since the predicate, *was reduced in size*, is structure-sensitive, the predicate applies to the group-as-one denotation. Groups-as-one have not yet been represented formally in the semantic treatment. Since groups-as-one are wholes, they are represented by constants. The constants are marked with slashes as in '/a/' and '/b/' to mark that they stand for structured wholes, rather than unstructured purely extensional individuals. Given the assumptions about time and the (rough) lexical meaning of the predicate given above, 21' entails 21''.

21''. Reduced_in_Size $(/c/) \leftrightarrow \left| f_c(w_@, t_1) \right| > \left| f_c(w_@, t_3) \right|$

This says that the committee-as-one was reduced in size just in case the cardinality of the group-as-many at time t_1 is greater than the cardinality of the group-as-many at time t_3. The application of the predicate *was reduced in size* requires using the function associated

with the structured group-as-one at multiple times. As groups-as-many do not have associated functions, a group-as-many cannot be the argument of such predicates.

Since the predicates in the table above and others that are structure-sensitive apply to groups-as-one and groups-as-one can vary greatly in members across times and worlds, there are no entailments to groups-as-many. In this way we avoid the entailments Barker and Schwarzschild argued were problematic. Further, we avoid even stranger claims like that 21 entails 72 or 73.

> 72. Alice, a member of the committee, was reduced in size.
>
> 73. The members of the committee were reduced in size.

I have argued that groups-as-many are purely extensional and that groups-as-one are structured entities, for they combine material parts with a formal structural component. When a predicate is structure-sensitive, it applies to the group-as-one. When a predicate is extensional, it applies to the group-as-many. Extensional predication can be either distributive or collective. In both cases such predicates take groups-as-many as argument.

VI. Concluding Remarks

I am not the first to appeal to intensionality in a treatment of collective nouns. Pearson (2011) recent argued that collective nouns denote intensional entities, specifically functions from indices to sets of members. While the view is similar to the view I have proposed, I offer two objections to it. First, there is an obvious argument against taking the group-as-one denotation of a collective noun to be intensional. Teams seem to take up space. Committees seem to be more like rocks than the property *goodness* or the proposition *that yellow is a color*. Groups seem extensional! The view I have sketched captures this intuition, as groups are primarily material objects. Groups-as-many are purely extensional, while groups-as-one are material entities with a particular structural-functional organization. Groups-as-one are structured entities, but I think the view that groups are organized entities is easy to accept. Even according to common sense a group's organization is integral its identity, so in this way groups-as-one are also partially intensional entities.

Second, I showed how collective nouns allow for singular and plural pronominal agreement. While here I have not developed an account of the agreement behavior of collective nouns, I suspect that a successful account will have syntactic and semantic components. On my view collective nouns have both a singular and a plural denotation. The availability of both could be used to account for the semantic aspects of agreement. While Pearson can account for plural agreement in terms of the extension of the denotation of a collective noun at an index, the only non-plural entity with which 'it' or 'its' to agree is the denotation of a collective noun. The denotation is a function. Yet, a sentence like 'the committee wrote **its** final report' does not mean that the committee wrote an intension's final report. Intensions don't seem to be the sorts of things that can possess reports or anything else. The semantics I briefly sketched here is more promising than a more fully intensional approach. Next, I turn to a very brief examination of Landman's partially intensional treatment of collective nouns.

Landman (1989a, 1989b) takes collective nouns to ordinarily denote sets of sets of members. For example if Committee A has members a, b and c, then on Landman's account Committee A = {{a, b, c}}. If Committee B has the same members it too is identical to {{a, b, c}}. To account for cases like those involving committees paying official visits he adds restricted intentional individuals. On the view, Committee A as Committee A, with that intentional property, can truly be predicated with *pay an official visit to South Africa*, while Committee A as Committee B, restricted to that intentional property, fails to be truly predicated with *pay an official visit to South Africa*. There are two marks against Landman's view. First, he utilizes an extremely large ontology. He has in addition to extensional groups an expansive universe of intentional objects. If a more ontologically parsimonious treatment is available, it is preferable.

Second, Landman's view only captures the sort of intensionality related to the *Non-Identical Coincidents* condition. That is, his view only captures that two distinct groups can have all and only the same members. His view does not account for the possibility for groups to sustain alterations in their members, the sort of intensionality associated with the *Membership Variety* condition. Landman takes the two sorts of intensionality to have distinct sources. He states that the ability for a group to change members across times "is an instance of the individual/functional reading ambiguity that we find with other expressions (like **the temperature** and **the president**)" (1989b, 727). He holds

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that another strategy will need to be imposed on his semantics to handle this additional sort of intensionality.

A virtue of my account is that is captures both sorts of intensionality. Groups-as-one can have all the same members at a time while remaining distinct due to their structures or variation in members at other times or worlds. Given this, when a group-as-one is the argument of a predicate that is structure-sensitive, as in Landman's *official visit* cases, expressions that have distinct group-as-one denotations cannot be substituted salve veritate. Further, since groups-as-one are associated with a function that delivers a possibly distinct group-as-many for each index, the variability in group membership is captured. An account that captures both sorts of intensionality in a unified way is neater than one that requires two distinct strategies.

Moreover, there is evidence that the sort of functionality that allows for a group to change members is better captured on the structured whole account I've developed, than by appeal to an individual/functional ambiguity. Given world knowledge we take sentences like 74 to be false (and somewhat strange), while sentences like 75 and 76 are both acceptable and true.

> 74. The president gave the Gettysburg Address, ordered the invasion of Iraq and vocally supported the Affordable Care Act.
>
> 75. The Supreme Court ruled on *Roe v. Wade* and *Citizens United*.
>
> 76. Manchester United has won the FA cup 11 times.

Sentence 74 is false as it relies on a single individual doing all three things. Since different individuals playing the 'President of the United States' role did each of these things, the sentence is false. A single use of an expression with an individual and a functional reading cannot be used to pick out multiple individuals (i.e., multiple functional role players). In contrast, 75 and 76 rely on different members playing the roles required by the structure of the Supreme Court and by the structure of Manchester United. However, we take the sentences to be true. Capturing the semantics of collective nouns according to the view that they have a denotation that has an integral functional-structural feature accounts for the distinction between truth value judgments involving collective nouns and those involving standard expressions that are ambiguous between an individual/function pattern.

I have argued that collective nouns are polysemous between a group-as-one and a group-as-many meaning. I sketched a metaphysics on which groups-as-one are structured wholes which are partially non-extensional in having a structure as an integral part. I showed that collective nouns can be arguments of distributive, collective and group-as-one predication. Distributive predication and extensional collective predication involve groups-as-many as arguments. Structure-sensitive predication involves taking groups-as-one as argument. The view that collective nouns are polysemous between group-as-one and group-as-many meanings captures our common sense view of groups, fits nicely with a view of the metaphysics of groups and is able to account for a range of semantic data involving collective nouns. The view I have sketched here should be taken seriously in future work on the semantics of collective nouns.

Works Cited

[Author]. Omitted for review.

Barker, C. (1992) Group terms in English: Representing Groups as Atoms. *Journal of Semantics* 9: 69-93.

Brisson, C. (2003) Plurals, All, and the Nonuniformity of Collective Predication. *Linguistics and Philosophy* 26: 129-84.

Boolos, G. (1984) To Be is to Be the Value of a Variable (or Some Values of Some Variables). *Journal of Philosophy* 81: 430-450.

Crystal, D. (1997) *A Dictionary of Linguistics and Phonetics*. Oxford: Blackwell Publishers.

Dowty, D. (1986) A Note on Collective Predicates, Distributive Predicates and All. In *Proceedings of ESCOL '86*: 97-115.

Fine, K. (1999) Things and Their Parts. *Midwest Studies in Philosophy*. XXIII: 61-74.

Jespersen, O. (1914) *A Modern English Grammar on Historical Principles.*

Juul, A. (1975) *On Concord of Number in Modern English*. Copenhagen: Nova.

Koslicki, K. (2008) *The Structure of Objects*. Oxford: Oxford University Press.

Landman, F. (1989a) Groups I. *Linguistics and Philosophy* 12 (5): 559-605,

———— (1989b) Groups II. *Linguistics and Philosophy* 12 (6): 723-744.

Levin, M. (2001) *Agreement with Collective Nouns in English.* Lund: Lund Studies in English.

Link, G. (1983) The Logical Analysis of Plurals and Mass Terms: a Lattice Theoretic Approach. In *Meaning, Use and Interpretation of Language*, 302-323. Berlin: Gruyter.

McKay, T. (2006) *Plural Predication.* Oxford: Clarendon Press.

Moltmann, F. (1997) *Parts and Wholes in Semantics.* Oxford: Oxford University Press.

——— (2005) Two Kinds of Universals and Two Kinds of Collections. *Linguistics and Philosophy.* 27(6): 739–776.

Nicolas, D. (2005) Mass Nouns and Plural Logic. *Linguistics and Philosophy* 28 (5): 599-641.

Oliver, A. and T. Smiley. (2001) Strategies for a Logic of Plurals. *Philosophical Quarterly* 51(204): 289–306.

——— (2013) *Plural Logic.* Oxford: Oxford University Press.

Pearson, H. (2011) A New Semantics for Group Nouns. In Mary Byram Washburn et al. (eds.) *Proceedings of the 28th West Coast Conference on Formal Linguistics*, 160-168.

Pustejovsky, J. (1995) *The Generative Lexicon.* Cambridge, Mass.: MIT Press.

Quine, W.V.O. (1948) On What There Is. *Review of Metaphysics.* 2: 21-38 reprinted in his *From a Logical Point of View.* (1953) Cambridge, MA: Harvard University Press.

——— (1960) *Word and Object.* Cambridge, MA: MIT Press.

Quirk, R., Greenbaum, S., Leech, G. and Svartvik, J. (1985) *A Comprehensive Grammar of the English Language.* London and New York: Longman.

Scha, R. (1981) Distributive, Collective and Cumulative Quantification. In J. Groenendijk, T. Janssen & M. Stokhof (eds.), *Formal Methods in the Study of Language*, vol. 2. Amsterdam: Mathematisch Centrum, 483-512.

Schwarzschild, R. (1996) *Pluralities.* London: Kluwer Academic Publishers.

——— (2011) Stubborn Distributivity, Multiparticipant Nouns and the Count/Mass Distinctions. In S. Lima, K. Mullin & B Smith (eds.), *Proceedings of the 39th Meeting of the North East Linguistic Society (NELS 39)*, vol. 2. Amherst, MA: GLSA, 661-678.

Schein, B. (1993) *Plurals and Events.* Cambridge, MA: MIT Press

Shapiro, S. (1997) *Philosophy of Mathematics: Structure and Ontology.* Oxford: Oxford University Press.

Suerland, U. and Elbourne, P. (2002) Total Reconstruction, PF Movement, and Derivational Order. *Linguistic Inquiry* 33 (2): 283-319

Winter, Y. (2002) Atoms and Sets: A Characterization of Semantic Number. *Linguistic Inquiry* 33: 493-505.

Winter, Y. and Scha, R. (2014) Plurals. In Shalom Lappin and Chris Fox (eds.), *Handbook of Contemporary Semantics.* Wiley-Blackwell.

Yi, B-U. (2005) The Logic and Meaning of Plurals, Part I. *Journal of Philosophical Logic* 34 (5/6): 459–506.

Yi, B-U. (2006) The Logic and Meaning of Plurals, Part II. *Journal of Philosophical Logic* 35 (3): 239-288.

Zwicky, A. and Sadock, J. (1975) Ambiguity Tests and How to Fail Them. *Syntax and Semantics* 4: 1-36.