

Bare Plurals in Object Position: Which Verbs Fail to Give Existential Readings, and Why?

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Abstract

We examine closely which predicates fail to allow existential readings for their bare plural objects. We show that, among the verbs, rather than it being the individual level predicates (Carlson 1977) that fail to allow existential readings, it is a narrower set of verbs, which we identify with the “psychological verbs with experiencer subjects” (the psych-ES verbs). We give an explanation which relies on the distinction between verbal predicates which have an eventuality argument and ones which do not. We propose that an existential reading is made possible by the presence of a localising situation, which may be provided either by the eventuality argument of the verb or by an appropriate context. We propose that the psych-ES verbs are distinctive among verbs in not possessing an eventuality argument, which accounts for their lack of existential readings for bare plural objects. We show, too, why psychological verbs which lack eventuality arguments tend to have experiencer subjects. . Finally, we offer a tentative proposal concerning the nature of psych-ES verbs which may explain their lack of eventuality arguments.

1. Introduction

In the past, a number of unwarranted assumptions have been made about the availability of existential readings for bare plural objects in English. Here, we address this by looking closely at exactly which predicates do and do not allow existential readings for their bare plural objects. We show that, among the verbs, rather than it being the individual level predicates (as characterised by previous accounts going back to Carlson 1977) that fail to allow existential readings, it is a narrower set of verbs, which we identify as corresponding to psychological verbs with experiencer subjects (the psych-ES verbs). We give an explanation of these observations which relies on the distinction between those verbal predicates which have an eventuality² argument and those which do not³. We propose that an existential reading is made possible by the presence of a localising situation, which may be provided either by the eventuality argument of the verb or by an appropriate context. We suggest that the psych-ES verbs are distinctive among verbs in not possessing an eventuality argument, which accounts for their lack of existential readings for bare plural objects, and we explain

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² We use *eventuality* to cover both events and states, in the sense of Bach (1986).

³ Space does not allow us to give an analysis of adjectival predicates in this paper. For such an analysis, see Glasbey (1999), Glasbey (in press).

why psychological verbs (psych verbs) which lack eventuality arguments tend to have experiencer subjects. We show why *John hates lawyers*, while not normally allowing an existential interpretation of *lawyers*, is able to do so in certain very restricted contexts. Finally we offer a tentative proposal concerning the nature of psych-ES verbs which may explain their lack of eventuality arguments.

2. *Hate* and *know*: existential and generic readings

Consider the following examples from (Cohen & Erteschik-Shir 2002):

- (1) John knows lawyers.
- (2) John hates lawyers.

It appears that we readily obtain an existential reading for the bare plural object *lawyers* in (1) but not in (2). Why should this be? Most analyses of the English bare plural fail to account for this difference. Carlson (1977) takes both *know* and *hate* to be individual level (i-level) predicates; thus the bare plural must be interpreted as a ‘kind’, giving rise to a generic reading for *lawyers* in both examples. Kratzer (1995) similarly classifies both *know* and *hate* as i-level. Her analysis is based on a syntactically induced restrictor-scope partition, where direct objects are mapped into the scope and are thus predicted to receive existential readings; hence the observed reading is predicted for (1) but not for (2). Kratzer uses a mechanism known as ‘scrambling’ which allows objects to move into the restrictor, thus allowing *lawyers* in (2) to receive a generic reading. But since scrambling is regarded as an optional process we have no explanation of why *lawyers* in (2) apparently *must* scramble and thus can only be interpreted as generic.

Several more recent analyses propose that the availability of existential readings for bare plurals require the predicate in question to be spatially located, in a sense that varies among different accounts. See, for example McNally (1998), Dobrovie-Sorin (1997). Although we believe that there are important intuitions here, spatial locatedness does not appear to work in (1) and (2) above. We would need some reason to say that *know*-eventualities are spatially located while *hate*-eventualities are not, and we can think of no convincing way to justify this. Since there appear to be no sound reasons for classifying *know*- but not *hate*-eventualities as spatially located, we will abandon this line of explanation in its present form – although there may well be connections between it and the account we will shortly propose.

3. A topic-based account: Cohen and Erteschik-Shir (2002)

Cohen and Erteschik-Shir (2002) (henceforth C & E-S) give an analysis of bare plurals that relies on the topic-focus distinction, as characterised, for example, in Erteschik-Shir (1997).

The C & E-S account is based on the notion of presupposition – the intuition being that ‘hate X’ presupposes ‘know X’, which effectively makes ‘lawyers’ in (4) a kind of topic and thereby blocks the existential reading of ‘lawyers’. The analysis relies on Van Geenhoven’s (1996) notion of incorporation – the presupposition serving to block the typeshifting required to give the existential reading (for details, see C& E-S 2002: 158-162).

We are not convinced by this means of blocking the existential reading for bare plural objects. Our primary objection is that we do not see how the notion of presupposition would work for examples like (3) and (4) below:

- (3) John owns diamonds.
- (4) John hates diamonds.

Here, we have an existential reading for ‘diamonds’ in (3) but not in (4). C & E-S would presumably try to block the existential reading in (4) by assuming the existence of the presupposition “John knows X”, i.e. if John hates X, then it is presupposed that John knows X.

Now, while this may make some intuitive sense if X is a lawyer (if John hates a particular lawyer, then it is presupposed that he knows that lawyer), it is very difficult to justify the presupposition in the case where X is a diamond. What does it mean for John to “know” a diamond?

We are therefore unconvinced by C & E-S’s (2002) analysis of object bare plurals, and we will shortly propose an alternative. First, however, we will take a closer look at the data in order to discover exactly which verbs do and do not give existential readings for their bare plural objects.

4. A closer look at the data

It is often taken as read that those verbs classified by Carlson (1977) as i-level give only generic interpretations for their bare plural objects. Sometimes a few exceptions – e.g. *know*, as discussed above – are acknowledged. Yet a closer look shows this accepted picture to be false. Notice, for example, that many verbs that might well be classified as i-level (in that they are lexically stative, tendentially stable predicates⁴) allow existential interpretations. Examples include *know*, *own*, *include*, *give*, *support* and *provide*, as shown in the examples below, all of which allow existential interpretations of their bare plural objects:

- (5) John owns racehorses.
- (6) Mary’s lecture notes include examples.
- (7) This article gives counter-examples.
- (8) The party manifesto supports controversial policies.
- (9) This letter provides counter-arguments.

All these verbs are lexical statives (shown by the fact that they do not combine readily with the progressive, they can be used in the simple present without receiving a habitual interpretation (see Smith 1991, for example) and all may be regarded as tendentially stable). Thus they are good candidates for i-level predicates. Of course, we could simply decide that, on the basis of the existential bare plural readings, these verbs are by definition not i-level. But if we cannot provide independent criteria for the classification, the i-level and s-level distinction loses its explanatory value and the explanation is circular. So we will avoid taking this step (and we will, eventually, discard the i/s distinction anyway). Can we, then, offer independent criteria to classify those verbs which do not give existential readings for bare plural objects? Do these verbs form a coherent group? We have seen that *hate* and *love* do not

⁴ See Chierchia (1995), for example.

allow existential bare plural objects. From a preliminary study of verbs as classified in Levin (1993), we have identified the following⁶ as verbs which do not (excluding exceptional contexts of the kind discussed above) allow existential readings for their bare plural objects:

hate, love, like, adore, respect, despise, deplore, envy...

These verbs all fall into Levin's (1993) class of "verbs of psychological attitude with experiencer subjects" (psych-ES verbs). As far as we can tell from our preliminary investigation, almost none of the psych-ES verbs allow existential readings for their bare plural objects.⁷ Moreover, we have not, so far in our preliminary survey, found any verbs *other* than the psych-ES verbs that do *not* allow existential readings for their bare plural objects. We would, however, recommend a detailed corpus study in order to verify this generalisation.

Let us proceed on the basis of what is, at least, suggestive evidence. We may ask why it should be that the psych-ES verbs fail to give existential readings for their bare plural objects? We will present a detailed explanation below. In brief, our explanation will rest on the fact that such verbs, unlike all other verbs, do not possess an eventuality argument. Of course, this is reminiscent of earlier accounts such as Kratzer (1995). However, we will not give a syntax-based explanation like Kratzer's; our account will be primarily a semantic one. We will also offer some suggestions as to why it should be the psych-ES verbs, in particular, that show this property. Our analysis is a further development of the account of bare plural subjects given in Glasbey (1998) and Glasbey (1999). We also borrow insights from a number of previous works including Kratzer (1995), Chierchia (1995) and McNally (1998). We will offer an explanation not only for the bare plural object data considered so far, but will give a brief treatment of bare plural subjects.

5. Classification of predicates

We begin our analysis by dividing predicates into two groups – verbal predicates such as *love*, *admire* and *run*, and adjectival predicates such as *happy*, *hungry* and *intelligent*⁸. We propose that verbal predicates have, in general, what we will call an 'eventuality argument' (we will flesh this out in more detail below). Adjectival predicates have, in general, no such eventuality argument.

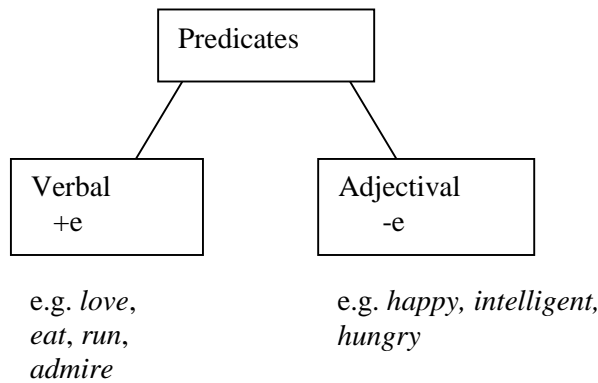
Thus we have:

⁵ Are we justified in regarding such contexts as exceptional? We believe so, and ask the reader to bear with us at this point. Our analysis will show that this was justified. If we do not take this step, then we may well find that for any verb we can always find some context that would allow an existential bare plural object., and we would forgo any possibility of distinguishing those verbs that need supportive contexts from those that don't, and may thereby miss important generalisations.

⁶ Note that this is not the full set, but a subset given here for illustrative purposes.

⁷ *Admire* is the only clear exception we have identified. See the discussion in Section 8.

⁸ We make the distinction here between 'verbal' and 'adjectival' predicates at a syntactic level. A verbal predicate is one that has the syntactic form of a verb. An adjectival predicate is of the form 'X BE Y' where Y is an adjective. However, examples like 'Yesterday night, John was boring to every guest' show that adjectival predicates may arguably describe events, indicating that a more fine-grained distinction may be needed, which we will not attempt to provide here. We are indebted to an anonymous reviewer for this example.



In the above diagram, +e denotes the possession of an eventuality argument in the verb's argument structure; -e denotes the lack of one. We may choose to represent the eventuality as a verbal argument using a notation based on Davidson (1967): *eat(e,x,y)*.

Thus (10):

(10) John ate cake.

would be represented as *eat(e,j,c)* where *e* is the eventuality, *j* is John and *c* is cake. Note that we do not attempt to represent tense, proper names or mass nouns here. Similarly (11):

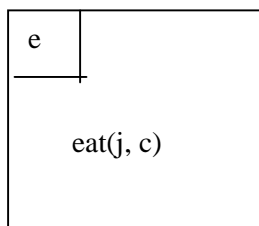
(11) John knows Mary.

would be represented as *know(e,j,m)*. By making our primary division of predicates into verbal and adjectival, we are cutting across the classification proposed by Carlson (1977), where the primary division is between i-level and s-level predicates. We believe that this revision is justified by the analysis that it allows (see later).

We will adopt a form of representation based on situation theory (Barwise & Perry 1983) and its applications to natural language semantics, known as situation semantics (see, for example, Cooper 1985, Cooper 1986, Barwise & Cooper 1993, Glasbey 1994). Our reasons for choosing this framework will become clear shortly.

6. Situation semantics analysis

We can represent the meaning of (10) in a situation semantics framework as:



This is the proposition that the situation e supports the infon $eat(j,c)$, using the Extended Kamp Notation (EKN) of Barwise & Cooper (1993).⁹ In situation theory, situations are parts of the world, which may support (or ‘make true’) units of information, known as ‘possible facts’ or ‘infons’. An infon may be thought of as roughly equivalent to a condition in DRT – except, of course, that standard DRT does not employ situations. In the above, j represents the individual ‘John’, and c ‘cake’. Once again, we have not attempted to represent the tense of the sentence nor dealt with the NPs in any principled way (see Glasbey 1994 for a treatment of tense and aspect in situation theory, and Cooper 1993 for a treatment of NPs, proper nouns, etc).

We regard an eventuality as a particular type of situation. We assume here that e is the minimal or ‘smallest’ situation supporting the infon $eat(j,c)$. This may be thought of, roughly, as the situation that supports this particular infon and no other.¹⁰

Let us now move onto to the situation semantic representations of sentences containing bare plural objects. We begin with (1), repeated here as (12):

(12) John knows lawyers.

We follow Van Geenhoven (1996) in treating bare plurals as denoting properties. According to Van Geenhoven and others, bare plurals on the non-generic interpretation denote *properties*. On such accounts, a verb such as ‘see’ has a *non-incorporating* version, (a), whose arguments are individuals, and an *incorporating* version, (b), whose arguments are an individual and a property respectively. The two versions can be represented as follows:

- | | |
|--|---------------------------|
| (a) $\lambda y. \lambda x. \mathbf{see}(x,y)$ | non-incorporating version |
| (b) $\lambda P. \lambda x. \exists y: P(y) \ \& \ \mathbf{see}(x,y)$ | incorporating version |

C & E-S (p.152) propose that (b) is related to (a) by type-shifting. Bare plural objects on a non-generic reading are interpreted according to (b). Consider (13):

(13) John saw spots.

This is represented as:

$\exists y: \mathbf{spot}(y) \ \& \ \mathbf{see}(j, y)$

This works as follows for (1). Using the incorporating version of ‘know’, C & E-S give the following DRT (Kamp & Reyle 1993) representation for (1):

x
John(x) know-lawyers(x)

⁹ For a detailed explanation of EKN and of situation semantics more generally, see Cooper (1992). For examples of further use of this notation, see Glasbey (1994) and Glasbey (1998).

¹⁰ The notion of minimal support is actually a little more complicated than this (see Glasbey 1994 for discussion) but the simplified version suffices here.

The bare plural *lawyers*, according to C & E-S, does not introduce a discourse referent. Type-shifting then takes place, to give the following discourse representation structure (DRS):

x
John(x) $\exists Y(\text{lawyers}(Y) \ \& \ \text{know}(x, Y))$

The situation semantic representation that we propose is:

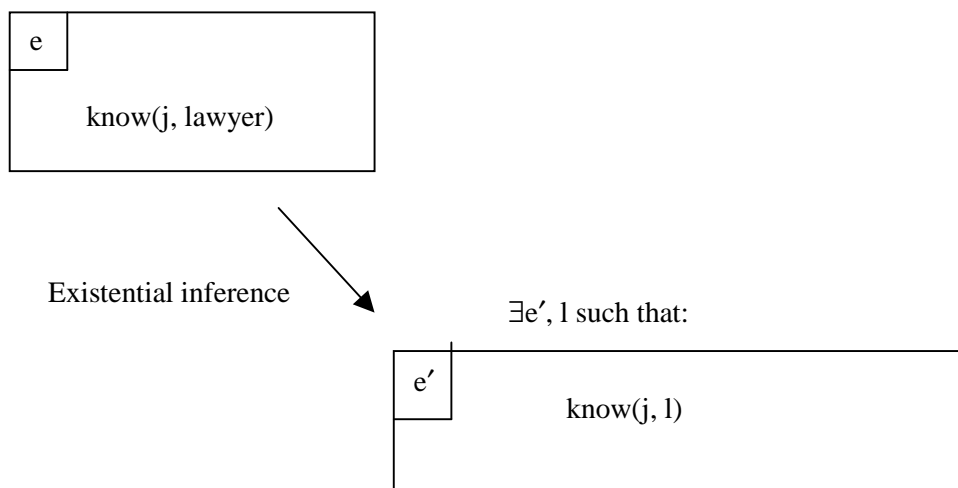
e	
	know(j, lawyer)

The supporting situation (eventuality) *e* is in this case a state, since the verb *know* is (lexically) stative. *j* is the individual named ‘John’, and *lawyer* is the property of being a lawyer.

Where does the existential reading for *lawyers* come from?¹¹ It comes, we propose, from a process known as the ‘existential inference’. The existential inference is licensed by a situation – in this case by the “overall” eventuality *e*. The existential inference yields existentially quantified individual situations *e*’ – one for each “knowing” of an individual lawyer by John. It may thus be thought of as a kind of type-shifting process – but one that can take place only under specially-licensed circumstances – the presence of an appropriate overall situation¹². We can represent the existential inference as follows:

¹¹ We may also ask where the generic reading, to the extent that there is one available for this example, comes from. This paper does not attempt to deal with generic readings. See Glasbey (1998) for a treatment of generic readings within a channel theoretic framework. Note, however, that more standard treatments of generics may well be compatible with the account of existential readings given in the current paper.

¹² We adopt the proposal here, made in (Glasbey 1994), that eventualities (events and states) comprise a subset of the total set of situations. The situation theoretic notion of a situation as a part of the world appears to be entirely consistent with this, and indeed the notion of an event or state accords, in our opinion, with the original intuitions about situations proposed by Barwise & Perry (1983). For further discussion, see (Glasbey 1994).

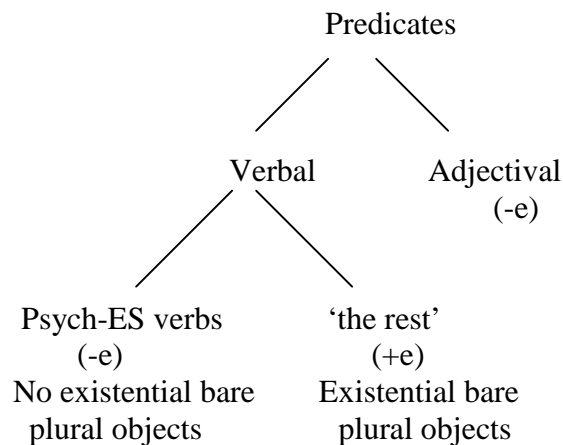


In the above diagram, e' is an individual situation supporting the infon $know(j, l)$, where l is an individual lawyer. The existential inference is, as stated above, licensed by e – the ‘overall situation’. In other words, the ‘overall situation’ is the situation supporting all the facts about knowings of lawyers by John, while the ‘individual situations’ are smaller situations, each of which supports only a single infon concerning the knowing by John of one individual lawyer. It is the fact that *know* has an eventuality argument that makes the existential inference possible here. Note that the primary outcome of the existential inference is the yielding of existentially quantified individual situations e' . Individual lawyers, l , are derived, one per situation, as a secondary effect. We will see later that the existential inference is also responsible for existential readings for bare plural *subjects*.

Since we claim that verbs in general have eventuality arguments, this predicts that all verbs will allow existential readings for their bare plural objects (and subjects). Clearly, this is incorrect in the case of the psych-ES verbs. At this stage, we will simply propose that psych-ES verbs do not have eventuality arguments. Thus there is no situation provided by the verb to license the existential inference, and therefore no existential readings for bare plural objects. However, we still need to explain, of course, why these particular verbs lack eventuality arguments. We will return to this towards the end of the paper.

Our classification of predicates looks as follows¹³:

¹³ This predicts that all adjectival predicates will lack existential readings for their bare plural subjects – which is clearly not the case. See our treatment of adjectival predicates in Glasbey (1999), which explains the observations.



Let us look at the psych-ES cases, where no existential inference is available, in a little more detail. We will represent (2), repeated here as (14), as shown below:

(14) John hates lawyers.

hate(j, lawyer)

Notice that no situation supports the infon here. Presumably, in that case, we might consider the infon to be supported by the maximal or ‘world’ situation that we will call w :

w	
	hate(j, lawyer)

We may ask why it is that w , the ‘world situation’ cannot support the existential inference. We offer two possible answers here. The first is that *hate(j, lawyer)* is not an infon at all, and is therefore not supported by any situation. In situation theory, there are two types of predicates, ‘relations’ and ‘types’. Relations are the ones we have used so far in this discussion; we have thought of them roughly as being denoted by verbs. Relations combine with arguments to produce infons, which are then supported by situations, as we have seen. The second kind of situation theoretic predicate, types, do not form infons. A type has one or more arguments, once again corresponding to the arguments of the verb. If *hate* is a type, then we represent the meaning of *John hates Mary* as:

j, m	
	hate

This is the proposition that the individuals j (‘John’) and m (‘Mary’) are classified by the binary type *hate*. The information encoded here can be thought of in some sense as ‘non-

local'. The information about John's hating Mary is not supported by any particular situation (or part of the world) – it may be roughly described as general, non-localised information.

This allows us to say that, since there is no situation here, the existential inference cannot be licensed, and hence there is no existential reading for the bare plural. Spelling this out for (14), we now have:

j, lawyer	
hate	

Here, we are now considering the binary type *hate* to hold of the individual *j* ('John') and the property *lawyer*. Now we can see that there is no supporting situation, and thus no existential inference and no existential reading for *lawyers*.

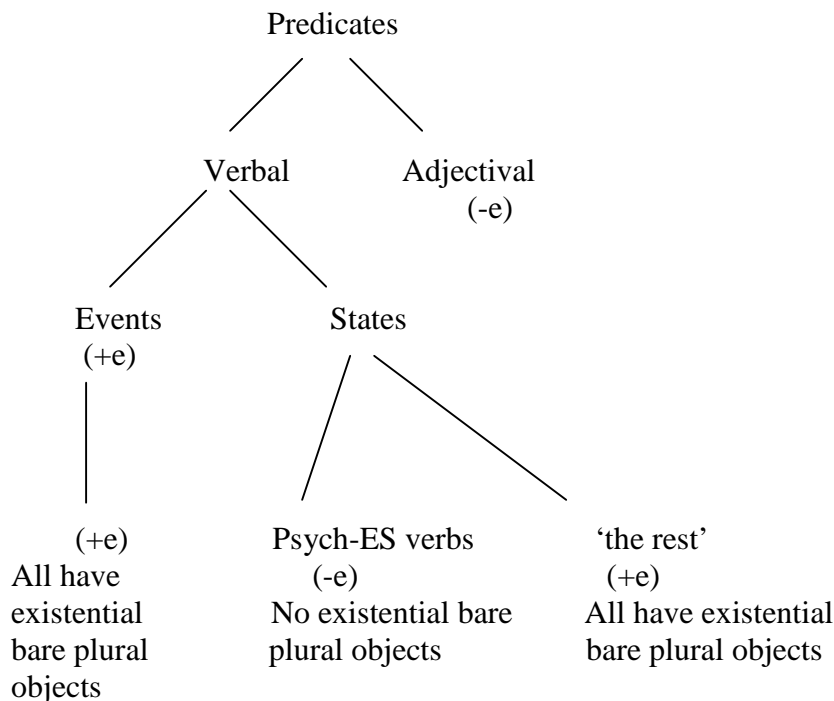
Alternatively, we may continue to regard *hate* as a relation, i.e., as forming infons which are supported by situations. We then go back to saying that the world situation, *w*, supports the infon, i.e.:

w	hate(j, lawyer)

But if we do this, we must explain why *w* does not permit the existential inference. We might perhaps say that existential inference relies on some notion of localisation. In other words, it is the localised nature of the situation that somehow results in the inference to particular situations. We realise, however, that this aspect of our analysis is incomplete, whichever route we take. Further work is needed to clarify the nature of the existential inference and its connection with localisation. (Indeed, what exactly is localisation? Is it spatial, or spatiotemporal, for example? We suspect, but cannot currently prove, the latter.) However, in spite of being unable to say at this point exactly what the existential inference is, we believe it is a useful starting point for further investigation and would welcome further research on the subject.

Before moving on, we need to refine our classification of predicates slightly, in order to incorporate the event/state distinction. It is not essential to our analysis that we make this distinction, since we are saying that both (lexical) event and (lexical) state verbs can have eventuality arguments – but the refinement will make things clearer and easier to compare with other accounts.

Our revised classification is thus:



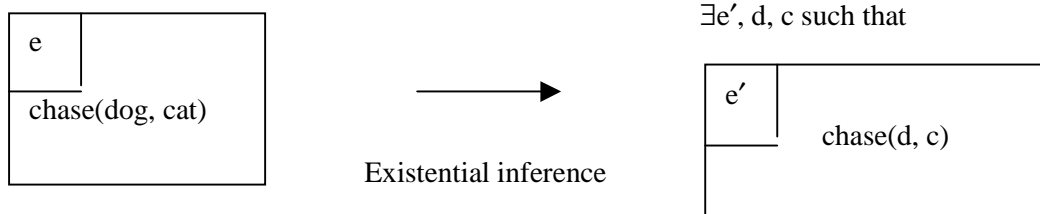
Here, we simply divide verbal predicates into (lexical) events and (lexical) states. Event verbs all have an eventuality argument, and hence these will always give existential readings for bare plural objects (and subjects) – as indeed has been shown to be the case in much previous work. State verbs divide into two categories – the psych-ES verbs, which do not have an eventuality argument, and the rest of the stative verbs, which do.

In order to develop our analysis further, we now need to consider (briefly) the interpretation of bare plural *subjects*. This has been alluded to a number of times so far in our discussion: it is now time to make things clear. What follows in the remainder of this section is a revised account of part of Glasbey (1998).

Consider (15), which has both a bare plural subject and bare plural object:

(15) Dogs chased cats in my garden last night.

Note that the temporal and locational adverbials are included solely to ensure that the desired interpretation is selected – one where there was a particular situation (event) consisting of chasings of cats by dogs at a particular spatiotemporal location. We can represent the meaning of this as follows, ignoring the past tense and the modifiers in order to keep things simple:

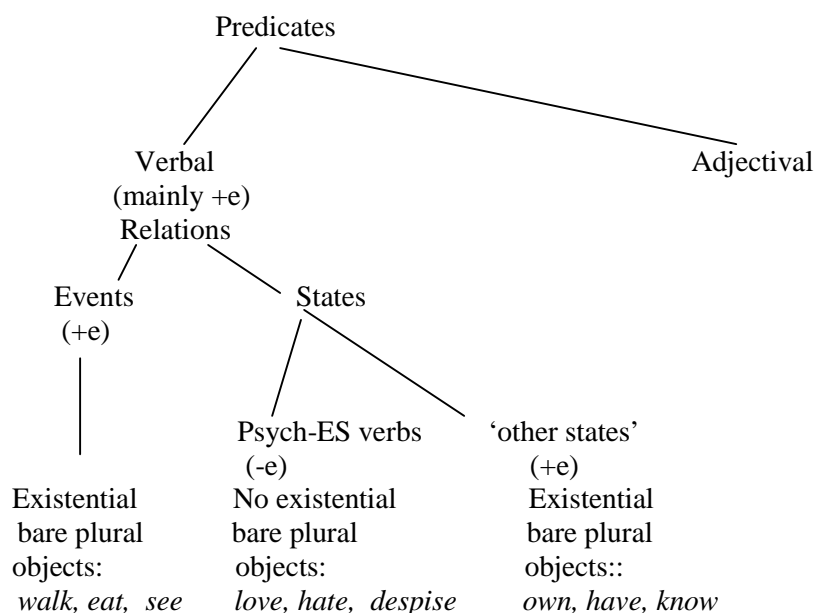


In the above, *d* is an individual dog, *c* an individual cat and *e*' is an individual situation (event) of a dog chasing a cat.¹⁴ The existential inference is licensed here by virtue of 'chase', an eventive verb, having an eventuality argument, and therefore providing a situation to license the existential inference.

Our treatment of bare plural subjects predicts that existential readings will be available for bare plural subjects in exactly the same linguistic environments as those that allow existential readings for bare plural objects. Any observed difference in available readings will have to be accounted for via the contextual effects to be discussed below.

7. Final classification of predicates

Our final classification of predicates is given below:



Note that we still have to explain why the psych-ES verbs lack eventuality arguments. But before we do so, we will return to examples (1) and (2). To recap, let us reconsider (2), repeated here as (16):

(16) John hates lawyers.

Although (16) does not normally give an existential reading for *lawyers*, C & E-S (2002) point out that in certain contexts such as John's writing a list of people he hates, the

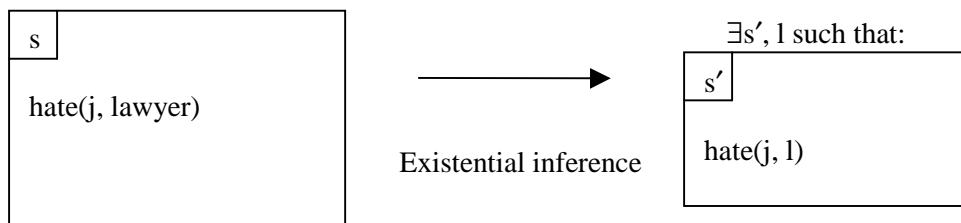
¹⁴ We have glossed over an important issue here regarding collective and distributive readings. Presumably, scenarios are possible, where, for example, two dogs together chase one cat. Thus, not all the individual situations will necessarily be one dog : one cat chasing events. Indeed, in the extreme, the whole bunch of dogs may collectively chase the whole bunch of cats. We do not believe that this causes any problems for the notion of existential inference, since there appears to be no problem with the existential inference yielding just one individual situation. However, the details would need to be worked out.

existential reading does become available. Imagine a scenario where John, for some reason, makes a list of the people he hates. Mary, on reading his list, remarks to someone else:

(17) Ah – I see John hates lawyers...

In this context, *lawyers* in (17) can clearly have an existential interpretation. Let us assume that this change in interpretation is a purely contextual effect, rather than being in any way due to the additional material added in (17). This seems reasonable, given that Mary could just have (say) nodded and uttered, to the same effect, ‘Ah – John hates lawyers...’.

How can we explain this? We have already proposed to classify *hate* as a relation, since we take all verbs to express relations. Because it is a relation, if we can find a context that will provide a situation to support the infon, then the existential inference will be possible and we will have an existential reading. Now it seems plausible that the ‘hate-list’ context can provide exactly the situation we need. We could think of the situation as corresponding to the list itself, or to John’s action in writing the list. Then the existential inference can take place as follows¹⁵:



Thus our account predicts that whenever context provides a suitable ‘localising’ situation, for an infon from a verbal predicate, the existential reading of the bare plural will become available¹⁶.

To summarise briefly at this point: we have introduced two distinctions:

- (i) between types and relations;
- (ii) between predicates with eventuality arguments and those without.

This allows us to explain the previously problematic context dependency of existential readings for the object bare plurals of verbal predicates.¹⁷ In particular, it allows us to give the same explanation for both. Now for our final challenge: can we explain why it is that the psych-ES verbs should lack eventuality arguments?

¹⁵ That is, the existential inference here may be seen as involving an inference from a writing situation to a set of hating situations. This appears plausible to us, given that the original writing situation involved writing a list of people who were hated.

¹⁶ An anonymous reviewer for this volume posed the question of whether any existential interpretation can be seen as a list interpretation at some level, in that a list of the individuals involved could always, given sufficient knowledge, be made. We accept that this may well be the case, but do not see it as a problem for our account. Indeed, we predict that if an existential reading is available then a situation of some kind must be present in order to license the existential inference.

¹⁷ We give a similar explanation for observations regarding adjectival predicates in Glasbey (1999).

8. Why do the psych-ES verbs lack eventuality arguments?

The list of psych-ES verbs given in Levin (1993: 191) is shown below. We present the list as given in Levin (1993), divided into two sub-classes – ‘positive verbs’, expressing a positive attitude on the part of the experiencer, and ‘negative verbs’, expressing a negative attitude.

Positive verbs:

Admire, adore, appreciate, cherish, enjoy, esteem, exalt, fancy, favour, idolise, like, love, miss, prize, respect, relish, revere, savour, stand, support, tolerate, treasure, trust, value, venerate, worship.

Negative verbs:¹⁸

Abhor, deplore, despise, detest, disdain, dislike, distrust, dread, envy, execrate, fear, hate, lament, loathe, mourn, pity, regret, resent.

Note, firstly, that none of these verbs appear, informally speaking, particularly event-like. We would not naturally speak of an event of Mary respecting Jane¹⁹, for example.²⁰ How can we be more precise about what we mean by ‘event-like’? One approach is to take the fairly standard view of an event as involving a change of state, sometimes in one or more of the participants. One stereotypical type of event involves one participant (often called the ‘agent’) taking part in some action which results in a change in the other participant (the ‘patient’). Dowty (1991) identifies sets of properties typically associated with agents and patients, and from this develops a characterisation of thematic proto-roles (shown below). In particular, note that a change of state in a participant is a contributing factor for that participant to be a proto-Patient.

In Dowty’s framework, the linking between syntactic and semantic representations is determined by clusters of verbal entailments, known as proto-Agent and proto-Patient properties. According to Dowty (1991: 572), contributing factors for the Agent proto-role are as follows:

- (a) volitional involvement in the event or state;
- (b) sentience (and/or perception);
- (c) causing an event or change of state in another participant;
- (d) movement (relative to the position of another participant);
- (e) (exists independently of the event named by the verb.)

Contributing factors for the Patient proto-role are:

- (a) undergoes change of state;
- (b) incremental theme;
- (c) causally affected by another participant;
- (d) stationary relative to movement of another participant;
- (e) (does not exist independently of the event, or not at all.)

¹⁸ One verb, *rue*, from this class was prefaced by a question mark in Levin (1993) and we have omitted it.

¹⁹ As pointed out by an anonymous reviewer, it may, however, be possible to construe ‘resent’ as event-like, in some contexts.

²⁰ An interesting exception may be *enjoy*, where it does perhaps appear quite natural to speak of an event of, say, Mary enjoying an ice-cream. We suspect that the event-like quality may come from the contribution of the eventive verb *eat* here, given that *Mary enjoyed the ice-cream* means something like ‘Mary enjoyed eating the ice-cream’. This should be investigated further, but we will not do so here.

Now Dowty's argument selection principle (Dowty 1991: 576) is as follows:

“ARGUMENT SELECTION PRINCIPLE: In predicates with grammatical subject and object, the argument for which the predicate entails the greatest number of proto-Agent properties will be lexicalised as the subject of the predicate; the argument having the greatest number of proto-Patient properties will be lexicalised as the direct object.”

Filip (2000) explains how this works for the related pair of psychological predicates, *frighten* and *fear*. In her words:

“Although the Experiencer argument of the *fear* and *frighten* classes are equal in Agent properties, they are unequal in that the Experiencer of the *frighten* class denotes an entity that undergoes a change in the denoted event, and hence it is a ‘better’ patient. Therefore, it must be the direct object (cf. Dowty 1991: 580).” (Filip 2000: 9.)

Notice, therefore, that in general those verbs which refer to events will be ones where one participant (which we will call A) causes a change of state in the other participant, B. The A participant will therefore tend to be a proto-Agent, and will be realised as the subject, and the B participant will tend to be a proto-Patient and be realised as the direct object. This explains, for example, why in the case of the eventive verbs *chase* and *eat*, the chaser and the eater are realised as subjects, while the chased and the eaten are direct objects.

Now consider the psychological verbs (psych verbs). Let us begin by assuming that some of these ‘describe events’ and some do not. To be explicit, a verb that describes an event is one that has an event argument, and therefore allows existential readings for its subject and object bare plurals. According to our foregoing analysis, it is the presence of an eventuality argument (where the eventuality may be either an event or a state) that licenses the existential reading for bare plurals. Let us also suppose that there are some psychological verbs that do not, in the above sense, describe events – that is, they will not allow existential readings of bare plurals. We will refer to these two classes of psych verbs as ‘eventive’ and ‘non-eventive’ respectively.

We should note at this point that our proposal is that these “non-eventive” psych-verbs do not have an eventuality argument of any kind – neither an event argument nor a state argument. This distinguishes them from other stative verbs such as ‘know’, ‘own’ etc., which have a state argument. The presence of this state argument, as already noted, gives rise to the existential bare plural readings for these stative non-psych verbs, as observed in examples (5-9). The non-eventive psych verbs are different in that they have no eventuality argument of any kind.²¹

Consider now the eventive psych verbs. We might contemplate a possible ‘standard’ scenario here, in which one participant (we assume transitive verbs) does something as a result of which the other participant undergoes a change in psychological state: e.g., the scenario described by *Fred amused Mary*, on a single-event reading where Fred carried out some action which resulted in Mary becoming amused. Now, because the experiencer (Mary) undergoes a change of state and is causally affected by the other participant (both of which are listed by Dowty as proto-Patient properties), and because the amuser (Fred) is volitionally involved, sentient, and causes a change of state in the other participant (all of which are

²¹ We are aware, however, that we currently have no independent evidence for a stative verb like ‘know’ having a state argument while a stative psych-verb like ‘love’ does not. Such evidence would strengthen our account considerably, but will have to wait for further research. Note, however that the distinction is not purely arbitrary and hence circular, in that the psych-verbs do at least form a coherent and “recognisable” group.

included in Dowty's proto-Agent properties), there is presumably a strong tendency for the experiencer to be realised as the direct object, and the amuser to be the subject (according to Dowty's ASP). And, of course, this is exactly what we observe in the case of *amuse*, which therefore falls into the class of psych-verbs with experiencer objects, or psych-EO verbs. There are many others in this class, and if we examine the list of psych-EO verbs in Levin (1993) we find that, without exception, these all fit the scenario described above – they describe events where one participant does something that results in change of state in the other, the experiencer participant. To take a couple more examples, *frighten* and *entertain* express scenarios which are naturally construed as events. For example, *John frightened Mary* can be readily understood to mean that John did something specific which caused Mary to feel fear (although there are other readings – for example the one where John had a disposition to cause fear in Mary).

Now let us turn to the class of non-eventive psych verbs. We see that these do not follow the stereotypical agent/patient scenario described above. Consider the verb *love*. If John loved Mary, for example, it does not seem possible to identify any 'events' here. The crucial thing with these non-eventive verbs is that the experiencer is not construed as undergoing a change of state. Nor does the other participant necessarily carry out any action which causes a change of state in the experiencer. The experiencer, here, by virtue of sentience, if not quite of volitional involvement, has a number of proto-Agent properties and no proto-Patient properties. Dowty's ASP would therefore predict that the experiencer will be realised as subject, which is indeed the case with *love*.

So we see a pattern – non-eventive psych verbs tend to have experiencer participants which do not undergo a change of state and hence tend to be low in proto-Patient properties and are therefore more likely to be realised as subjects. But, of course, non-eventive verbs (those with no eventuality argument) are precisely those which lack existential readings for bare plural objects. Eventive psych verbs, on the other hand, have experiencer participants which are relatively high in proto-Patient properties and therefore tend to be realised as objects. So we have a putative explanation of our observation that the psych-ES verbs lack existential bare plural object readings and the psych-EO verbs have such readings. It is the presence (or otherwise) of an eventuality argument that both determines the possibility of existential bare plurals and exerts a strong influence over whether the experiencer is realised as subject or object.

Note that we say "exerts a strong influence". Dowty's ASP works on the basis of prototypical properties, and relies on a sense of other things being equal. It thus predicts tendencies rather than absolutes. Therefore we perhaps should not be surprised if we encounter a few exceptions to the generalisation above. It should be said, however, that in our preliminary survey we have come across very few such exceptions – that is, of either psych-ES verbs that *do* allow existential bare plural objects, or psych-EO verbs that do not. As mentioned above, however, we recommend a detailed and intensive survey of these verbs.

But why should some psych verbs have no eventuality argument, when the rest of the verbs (including both events and states) do? We suggest that certain psych verbs, including *like*, *love*, *hate* and so on are inherently generic in a sense similar to that of Chierchia (1995). Our account differs from Chierchia's in that it is primarily a semantic analysis, while Chierchia's is a syntactic approach related in some ways to that of Kratzer (1995). Another difference between Chierchia's account and our own is that he proposes that all i-level verbs, not just the psych-ES ones, are inherently generic. Thus Chierchia includes, for example,

know in his class of inherent generics, which, incidentally, leaves him unable to explain why ‘pasta recipes’ in (18) has an existential reading:²²

(18) Italians know pasta recipes. (Chierchia’s (58a) 1995:200.)

We borrow from Chierchia (1995) the insight that certain predicates generalise over eventualities, and that this generalisation may somehow be built into the lexical entry for the verb.²³ If we adopt this idea, it may seem a straightforward matter to make the leap from classifying *like* as an inherent generic to explaining why it does not allow (in the lack of a special context) existential readings for its bare plural objects. We can simply say that because the generic operator generalises over eventualities there is no ‘single’ eventuality to provide a situation to license the existential inference. We still, however, need to explain why it should be that certain psych verbs are inherent generics. We suggest, somewhat tentatively, that this may be because the verb ‘like’, for example, serves to generalise over a number of “liking” experiences. If, for example, I eat a number of hamburgers and enjoy each individual experience, then I may generalise and say ‘I like hamburgers’. Note that the verb ‘enjoy’ was used to describe the individual experiences, since ‘like’ cannot normally be used to describe an individual “liking” experience”. Nor can ‘love’, or ‘hate’, except perhaps in a few special contexts which may allow me to say ‘I am liking/loving this hamburger’, or ‘I am hating this journey’. We propose, therefore, that the group of psych verbs under discussion are inherently generic because their meaning is derived from a generalisation over individual experiences, in a way which makes intuitive sense for verbs of psychological attitude while it would not do so for verbs such as ‘own’ or ‘know’.

There is a further complication, in that simply saying that *like* is generic will not do. Consider the generic form of an eventive verb such as *chase*:

(19) Fido chases cats.

In (19), there is an existential reading for *cats*, even on the generic reading of the verb (roughly paraphrased as ‘There are cats that Fido habitually chases’). The fact that generic uses of eventive verbs allow existential readings for bare plurals is, of course, well-known. Our analysis explains this in terms of the eventuality argument of *chase* providing a situation which licenses the existential inference.²⁴ But in that case, if we view *like* as an inherent generic, then why cannot the individual eventualities which make up the ‘like’-state serve to license the existential inference? Perhaps we can say that these individual eventualities have in some sense ‘disappeared’. Thus, although we might want to think of *like* as being derived in some way from underlying eventualities (even though these are not individually lexicalised), the process of deriving the generic form (which we might call ‘generification’) has somehow destroyed or rendered invisible those underlying eventualities.

This may become clearer if we consider the psych-EO verb *amuse*. *Amuse* is presumably eventive, since there is a single event reading:

²² We note that we are required to explain the lack of an existential reading for ‘Italians’ in (18). Our account predicts the existence of such a reading, given that ‘know’ is a relation and is not a psych-ES verb. Notice, however, that an existential reading for the subject is available in (i) *In this school, five-year-olds know French*, and similar examples. Here, we would claim that it is the contextual availability of a situation corresponding to ‘In this school’ that makes the existential reading possible. No such situation is made available by (18). We note, however, that the existential reading for the subject in (i) is considerably harder to get than that for the object in (18), and we do not have an explanation for this.

²³ Chierchia (1995: 199-206) offers two ways to treat i-level verbs – one where the generic operator is built into the lexical entry and one where it is not. The details are not important to us here.

²⁴ See Glasbey (1998) for a detailed explanation.

(20) John amused/ is amusing the baby.

Notice that (21) below has (at least) two generic readings:

(21) John amuses children.

The first is the one we might call a habitual reading – where John amuses children for a living, perhaps (e.g., he is an entertainer at children’s parties). On this reading, an existential interpretation is clearly available for *children*. The second reading is one where children are dispositionally inclined to find John amusing (perhaps because of some feature of his appearance or manner). On this reading, it does not seem to be possible to interpret *children* as existential. Thus if we regard the generic form as being derived from the eventive form (by the process we called ‘generification’) then there seem to be two types of generification possible here. In one, the underlying eventualities are rendered invisible and an existential reading is not possible; in the other, the underlying eventualities remain visible in the sense that they are available to license the existential inference and hence allow an existential reading. We will refer to the former as ‘internal generification’ and the latter as ‘external generification’. We will call the lexical form referring to the underlying eventuality as amuse_{ev} , the form produced by internal generification as $\text{amuse}_{\text{igen}}$, and the form produced by external generification as $\text{amuse}_{\text{egen}}$. Unfortunately we are unable to give a complete analysis here, but some further observations may be made. Firstly, we see that in the case of an inherent generic such as *like*, there is no like_{ev} form, and the lexical form corresponds to $\text{like}_{\text{igen}}$. Secondly, we note that eventive verbs like *chase* are subject only to the process of external generification. It appears to be the psychological eventive verbs alone which may undergo both internal and external generification. An explanation of this latter observation awaits further study. But at least we can now begin to explain why it is that *amuse* has two distinct generic readings, one with an existential reading for its bare plural object and one with a generic reading. Further work is also needed, of course, to establish what exactly is involved in the two distinct processes of generification.

Before moving on, an apparent exception needs to be discussed – the case of *admire* mentioned earlier. Consider (22):

(22) John admired impressionist paintings.

Admire follows a similar pattern to *amuse* in that there are at least three readings here. The first is a single event reading, where perhaps John went to an exhibition of impressionist paintings and stood gazing at some of them in admiration for a while. Here, we clearly interpret the bare plural as existential. There is a second reading, where John made a habit, perhaps last summer, of visiting galleries displaying impressionist paintings, and each time looked admiringly at those works. Notice that in this case he does not need to have admired all or most impressionist paintings, even among those he saw, so once again we have an existential reading, although of a different kind. Thirdly there is a generic reading, where John had a dispositional attitude to admire the work of the impressionists.

Our point here is simply to note that *admire* does allow readings where the bare plural is interpreted as existential. Yet, notice that *admire* is a psych-ES verb – the experiencer, or admirer, is realised as the subject. This potentially upsets our account, which predicts that if a verb allows existential bare plurals then it must be an eventive verb, and if it is an eventive verb then it will tend to have an experiencer object. Notice, too, that the existence of the three readings described above, one of which is clearly identified as single-event reading, offers

strong confirmation that *admire* is an eventive verb. Why, then, should it have an experiencer subject?

We observed above that Dowty's ASP describes a tendency rather than an absolute. Let us look more closely at the event of John admiring one or more of impressionist paintings. Notice, first of all, that John is not easily seen as a causally affected participant. It may be a moot point as to whether we want to think of John as undergoing a change of state by virtue of his admiring a painting (of course there are no strict real-world criteria that we can appeal to here – such judgments reflect the way that language construes experience, not objective facts about the world). The point is that John, as an admirer, is not highly-endowed with proto-Patient properties. Nor is the painting, as the 'admired' participant, well-endowed with proto-Agent properties. In fact, given that John is sentient and taking part in a volitional act, John has more proto-Agent properties and it thus seems entirely reasonable that he should be the subject.

There is, of course, a verb *impress* which has a roughly similar meaning to *admire* except that the two participants are reversed:

(23) Impressionist paintings impressed John.

Here the sentient participant is the object, showing that in this case things can go either way. Note, however, that the psychological meaning of *impress* may be seen as a metaphorical version of the literal *impress* whereby a physical mark is made on the participant. Assuming that the metaphorical version would maintain the same lexical form as the original literal version (which seems a reasonable assumption), then we may have an explanation here of why *impress* is a psych-EO verb. And indeed, a number of psych-EO verbs may be regarded as metaphorically derived from literal verbs where the event is much more stereotypical in terms of agent patient structure. Further work is needed here.

Apart from *admire*, and possibly *enjoy*²⁵, we have not found any verbs in the psych-ES group which allow existential bare plural readings. We believe, however, that a detailed study of the psych-verbs is needed to test our analysis, and indeed plan to carry out such a study involving corpus investigations.

9. The existential inference: (how) does it relate to topic/focus?

Earlier, we promised further discussion of the nature of the existential inference. We will discuss here the suggestion that there may be certain parallels between our account of bare plural objects and accounts such as C & E-S (2002) which employ notions of topic/focus. Might it be possible, for example, to identify our notion of "overall situation" with that of topic, and the existential inference licensed by that situation with some notion of focus? This would bring our account much closer to that of C & E-S (2002), although there would still be notable differences. If we could link our account to one involving topic/focus, this might, for example enable us to explain why existential bare plurals always appear to have narrow scope.

Such an identification is not, however, without problems. C & E-S (2002) propose that a bare plural which is a topic will always be interpreted as generic, and one which is focused will always be interpreted as existential. But consider following example:

²⁵ We mentioned earlier that a sentence like *Mary enjoyed the ice-cream* might well acquire its eventive status from the implied underlying event of 'eating', and recommend further investigation.

- (24) (a) Who owns racehorses?
(b) John owns racehorses.

On the standard wh-test for focus, it would appear that ‘John’ is focused in (24b). Actually, C & E-S (2002) might want to argue that ‘John’ is a contrastive topic rather than a focus. But even if we were to accept this, it seems clear that ‘racehorses’ is (part of) the topic, since it was mentioned in (24a). The point is that ‘racehorses’ is clearly not focused, and yet it receives an existential reading.

Another problem for C & E-S’s topic/focus-based account is that, as far as we can see, it fails to explain the lack of an existential reading for ‘hurricanes’ in the following example:

- (25) (a) Tell me about the South Pacific.
(b) Let’s see ... well, hurricanes are dangerous there.

According to C & E-S (2002), if a portion of the sentence can be topicalised then the rest is focused, and any bare plural in the focused part will receive an existential reading. The fact that they classify ‘dangerous’ as an i-level predicate makes no difference here that we can see. C & E-S speak of s-level predicates providing a spatiotemporal variable, which may be a topic, and of i-level predicates lacking such a spatiotemporal variable. They argue that it is harder to make an adjunct a topic than it is to make an argument a topic. But, if we understand them correctly, provided a topic (of some kind) is present, then a bare plural that is in the focus should be existential. In (25) ‘The South Pacific’ is clearly the topic, and thus ‘hurricanes’ is focused and should be existential, which it clearly is not²⁶.

So it appears that there may be problems in making a straightforward identification between topic and what we have called the overall situation. Another possibility is to try to identify the overall situation not with any topic, but with a topic of a particular kind – a spatiotemporal topic, called by C & E-S (2002) a “stage topic”. We could then say that a bare plural can only receive an existential interpretation when it is in the focus of a stage topic. This would get over the problem with (24) (because ‘racehorses’, while topicalised, is not a stage topic), but it is not so clear how it would help with (25), as presumably ‘the South Pacific’ would qualify as a stage topic. We are therefore left with something of a mystery on either type of account – what exactly is the existential inference, or why should a bare plural in the focus of a stage topic (and no other kind) be interpreted as existential?

The answers will have to wait for further research.

Conclusion

We have presented an analysis of the English bare plural which explains, among other things, why *lawyers* in (1) has an existential reading, while *lawyers* in (2) does not, except in special contexts. We explained why a context such as the ‘hate-list’ context for (1) allows an existential reading for *lawyers*. Our account of bare plural objects is part of a broader analysis, which relies, firstly, on a distinction between predicates which have eventuality arguments and those that do not, and, secondly, on a distinction between predicates which are relations (in the situation-theoretic sense) and those which are types. We have shown how, by making

²⁶ Our account would handle this by saying that ‘dangerous’, being an adjectival predicate, is a type rather than a relation, and thus no situation can support the relevant infon, so there is no existential inference and therefore no existential reading.

both these distinctions, we can explain the effects of context on the availability of existential readings of bare plurals.

Having taken a closer look at the data on the availability of existential readings for bare plural objects, we identified those verbs which do not give existential readings (except in special contexts) as being the psych-ES verbs. We offered a brief explanation of why things should pattern in this way, using Dowty's argument selection principle (Dowty 1991) to explain why this class of verbs, which lack event arguments, tend to have experiencer subjects.

In summary, our classification of predicates depends on a fundamental dichotomy between verbal predicates, most of which have eventuality arguments, and adjectival predicates, which, in general, do not. We have effectively abandoned the traditional i-level/s-level distinction, although our account owes many insights to previous analyses that used this distinction. We consider the verbal/adjectival distinction to be the primary distinction among predicates, while showing that a distinction between relations and types is also needed.

The distinction between eventualities (which may be arguments of verbs and include both events and states) and the more general notion of situation (which includes eventualities but is a broader notion, and may be made available by suitable contexts) is a further essential feature of our account. In analyses that make use of situations, eventualities and situations are often seen as the same thing. We have shown that it is important to distinguish between them.

Further work is needed to establish whether the generalisation identified (that it is the psych-ES verbs which lack existential readings for bare plural objects) is indeed correct. We recommend a detailed corpus study involving the psych-ES verbs, the psych-EO verbs and indeed as many verbs as possible from other classes. Clearly this is a substantial endeavour but one which we believe will repay the effort, especially as it appears that a number of previous accounts of bare plurals have gone astray by failing to pay close attention to exactly which predicates do and do not allow existential bare plurals.

We outlined in Section 8 a possible answer to the question of why it should be the psych-ES class of verbs that lack event arguments. A detailed account along the lines suggested (or indeed some other lines) remains to be worked out and tested.

Finally, we believe the notion of existential inference to be a powerful and useful one, inspired by a number of earlier accounts of bare plurals (such as those that rely on a notion of located vs. unlocated predicates, and indeed on Carlson's original notion of 'stage'). We have identified some possible parallels between the notion of existential inference and that of 'stage topic' as employed by C & E-S (2002). But there are problems, and even if these were to be resolved, we would still need to say exactly what is meant by the existential inference, and/or how a stage topic gives rise to an existential reading in the focused bare plural. Further work is clearly needed here.

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