

Disjunctive Agreement in Modern Greek

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Abstract

Singular disjunctive coordinate nouns in Modern Greek (MG) and in a number of other languages are interesting since the verb can show either singular or plural agreement. This variation is seen as the result of an analysis of the disjunction *or* either as ‘inclusive’ or ‘exclusive’ in truth-conditional semantics. We will argue that the variation in verb agreement is contextually motivated and therefore it is immediately related to the contextual interpretation of the disjunctive coordinate phrase either as an ‘exclusive’ (singular) interpretation or as an ‘and-coordinate’ (plural) interpretation. Our proposal will predict both verb agreement forms in singular disjunctive nouns taking into account the various discourse conditions, and combining λ calculus and the DRT theory, known as λ -DRT.

‡

1 Introduction

Although disjunction is discussed by a number of scholars (Morgan 1972; Morgan 1984; Morgan 1985; Peterson 1986; Jennings 1994; Eggert 2002) it has not been studied as extensively as conjunction.

One major issue concerns the agreement of the verb with the disjunctive coordinate nouns. Some of the scholars argue that verb agreement with disjunctive coordinate nouns is seen as the result of various speaker strategies (Peterson 1986). Others claim that the actual interpretation of the disjunctive coordinate phrase is the determining factor to verb agreement (Morgan 1985).

Thus, when the disjunctive coordinate phrase has an exclusive sense then singular verb agreement is more likely.

- (1) John or Bill is/???are going to win the race.
 - (2) John or Bill is/are going to come tonight.
- Morgan (1985)

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When the disjunctive coordinate phrase has an inclusive (and-coordinate) sense then the plural verb agreement is more likely (Morgan 1985:73).

- (3) I don't think that John or Bill are/is going to win the race. ¹
(Morgan 1985:72)

We will argue that MG native speakers adopt a distinction similar to the one presented above and therefore the choice of the verb agreement form follows from the interpretation they assign to the coordinate phrase.

The data analysis is based on a questionnaire that was developed in order to work towards the prevalent verb agreement form in disjunctive structures. The main aim is to consider the different interpretations assigned to the coordinate structures by MG native speakers. The questionnaire consists of 20 declarative and interrogative sentences with singular disjuncts of the same or different gender and of the same or different person.

The questionnaire was issued to 15 native speakers who are all university graduates from different areas in Greece. The participants were asked to make a choice between two possible verb forms and to consider both verb forms whenever they found it appropriate. Their choice depended on acceptability judgements on the basis of what they thought they would say and not on grammaticality judgements. Private conversations followed as to what motivated the choice of a singular or a plural verb agreement form in order to confirm the initial intuitions we had, concerning the interpretation of the disjunctive coordinate phrase.

The rest of the paper is organised as follows. In part 2, we will present a series of MG data that illustrates cases of disjunctive coordinate nouns interpreted as 'and-coordinate' (plural) or as 'exclusive' (singular). In part 3, we will present the proposal developed by Eggert (2002) couched within the DRT framework and, in part 4, we will present an analysis of our own proposal, which follows Dalrymple (2001) and Kokkonidis (2005) within the theory of λ -DRT.

2 The Modern Greek Data

The disjunctive coordinate phrases that are discussed in MG include conjoined singular nouns. The first group of data presents examples with singular verb agreement and the second group of data focuses on phrases with plural verb agreement.

In the first group of examples, the majority of native speakers assigned an exclusive interpretation in the coordinate phrase and therefore chose a singular verb agreement form:

¹In English, disjunctively conjoined nouns with the predisjunction and disjunction *either...or* show similar agreement patterns according to Morgan (1985).

- (4) *O Kostas i i Maria tha me parei me to autokinito,*
 the.SG Kostas.SG or the.SG Maria.SG will me pick-up with the car
(ohi kai i dyo).
 (not and the both)
 ‘Kostas or Maria will pick me up with the car, (not both)’
- (5) *O Kostas i o Giorgos ine xadelfos tis Marias, (ohi*
 the.SG Kostas.SG or the.SG Giorgos.SG is.SG cousin of-the Maria, (not
kai i dyo).
 and the both)
 ‘Kostas or Giorgos is Maria’s cousin, (not both)’
- (6) *O adelfos su i i adelfi su irthe exthes, (ohi*
 the.SG brother.SG your or the.SG sister.SG your arrived.SG yesterday, (not
kai oi dyo).
 and the both)
 ‘Your brother or your sister arrived yesterday, (not both)’

In the above examples, the informants showed that they seem to conceive the action as performed by the individuals separately and this is why they prefer the exclusive interpretation. The exclusive interpretation is confirmed by the presence of modifiers, such as *separately, individually, only*, etc. that make the exclusive sense even stronger in the sentence.

In the second group of data, native speakers showed a preference towards an and-coordinate interpretation in the disjunctively conjoined nouns and therefore the verb agreement form that they chose was the plural one.

- (7) *O giatros i o odontiatros mporoun na grapsoun*
 the.SG doctor.SG or the.SG dentist.SG can.PL to write
farmaka.
 prescriptions
 ‘The doctor or dentist can write prescriptions’
- (8) *Kafes i tsai servirontai dorean meta to geuma.*
 coffee.SG or tea.SG are-served.PL for-free after the dinner
 ‘Coffee or tea are served for free after the dinner’
- (9) *I eggios gineka i to pedi hriazonte to embolio*
 the pregnant.SG woman.SG or the child.SG need.PL the immunisation
kata tis neas gripis.
 against the swine flu
 ‘The pregnant woman or child need immunisation against swine flu’

All the examples are perceived by most native speakers as actions carried out or applied to both conjuncts and thus are cases of and-coordinate interpretation. Thus, the above examples can be paraphrased with a collective meaning, as follows:

- (10) *O giatros ke o odontiatros mporoun na grapsoun*
 the.SG doctor.SG and the.SG dentist.SG can.PL to write
farmaka.
 prescriptions
 ‘The doctor and dentist can write prescriptions’
- (11) *Kafes ke tsai servirontai dorean meta to geuma.*
 coffee.SG and tea.SG are-served.PL for-free after the dinner
 ‘Coffee and tea are served for free after the dinner’
- (12) *I eggios gineka ke to pedi hriazonte to embolio*
 the pregnant.SG woman.SG and the child.SG need.PL the immunisation
kata tis neas gripis.
 against the swine flu
 ‘The pregnant woman and child need immunisation against swine flu’

In both groups of data, however, we argue that there is a preference towards a specific interpretation either ‘exclusive’ or ‘and-coordinate’. Different discourse conditions may result in a different interpretation of the same example, as in the case of “Coffee or tea is/are served after dinner”, which results in an ‘exclusive’ (singular) sense when a choice is made and in an ‘and-coordinate’ (plural) when the availability is what matters.

To conclude, the MG data showed that native speakers assume two different interpretations for the disjunctive coordinate noun phrases, either as ‘and-coordinate’ where verb agreement is plural or ‘exclusive’ where verb agreement is singular. This forms the central notion for the theory that we adopt and the analysis we propose in the following sections.

3 Eggert’s theory of disjunction

Eggert (2002) formulates an analysis for coordination, whose main characteristic is that it accounts for agreement phenomena. More specifically it accounts for sub-propositional coordination, takes discourse factors into consideration when determining an argument’s semantic number and represents semantic number of coordinative arguments in a straightforward way.

Traditionally the logical connectors *and* and *or* are treated as boolean meet and join (or in some cases set-intersection and set-union) and are propositional operators. This treatment, however, faces problems when sub-propositional coordination needs to be accounted for where non-distributive conjunctions are involved. In (13), there is coordination between the propositions *Grant ran and Abigail ran* but not in (14), where we can not infer the reading *Grant met and Abigail met*.

- (13) Grant and Abigail ran.
 (14) Grant and Abigail met.

Similarly with disjunction the interpretation of (15) is not *The environment is a depressing choice or the economy is a depressing choice*.

(15) The environment or the economy is a depressing choice.

To overcome these problems Eggert (2002) favours a unified analysis for each of the two connectors *and* and *or* that allows them to operate over conjunct sets of any type and of any number and not as binary propositional connectors, as has been done in the past.

To achieve this he supports that *or* is a subset function that has common characteristics with the existentials and that distributivity and collectivity factors are contextually explained.

He treats *and* and *or* as quantifiers based on the observation that both operators get involved in the same types of scopal ambiguities as quantified NPs since the conjunction *and* and the disjunction *or* resemble semantically the quantifier *all* and the existentials, respectively.

3.1 An analysis for disjunction

Eggert (2002) shows that apart from the strict semantic factors, there are also discourse factors involved when determining the ‘semantic number’ of an argument in coordinate phrases. Thus, he claims that “‘semantic agreement’ should be analysed as a discourse phenomenon which is informed by the semantics” (Eggert 2002:92).

To capture the discourse and semantic factors in agreement, Eggert (2002) proposes an analysis of coordinate phrases based on Discourse Representation Theory (Kamp and Reyle 1993). The main advantage of DRT is that it uses a discourse structure that is mapped off of grammatical structure. Such a discourse structure allows the effective incorporation of any discourse-pragmatic features into the meaning of sentences when the latter are uttered in a particular discourse context. DRT analysis is advantageous since it takes both discourse and semantic factors into consideration when determining the semantic number of an argument. Thus, considering a given argument, its semantic number is determined by whatever discourse conditions apply to the discourse referent that corresponds to the argument.

Eggert (2002) develops a uniform theory for *and* and *or* in order to capture the wide range of data and also introduce a straightforward definition for plurality. He treats *and* as a type-specific operator meaning that it is a generic operator that is identified with “whatever operator is defined for the domain of the conjoined terms” (Eggert 2002:92) and not with meet per se, the Boolean approach proposed by Keenan and Faltz (1985).²

In his analysis of *or*, he clearly shows that *or* is not *and*’s dual but rather it must be treated as a subset function, which moves from sets to subsets. In other words, the subset function picks up either one (i.e. resulting in SG agreement) or both

²For more discussion see Eggert (2002).

(i.e. resulting in PL agreement) members of the set, being polysemous between two meanings. Thus, he completely rejects the possibility of analysing *or* as the Boolean or clausal, and therefore having the same meaning as distributive *and*.

Formally the subset function is “a function f such that for any non-empty set A , $f(A)$ is a non-empty subset of A .”

$$(16) \quad \text{SUB} = \{f: (\forall X: X \neq \emptyset) f(X) \subset X \wedge f(X) \neq \emptyset\} \text{ (Eggert 2002:110)}$$

Eggert (2002) presents a proposal for verb agreement with disjunctive coordinate nouns, formulated within DRT where agreement phenomena can be incorporated, and following a similar analysis to the DRT analysis of existentials. An important difference, however, between disjunction and existentials is that disjunction does not introduce a discourse referent as the existentials do. This becomes clear from examples like the following, where the continuation of the discourse does not assume that a discourse referent is introduced, i.e. *she*.

- (17) Gertrude or Abigail is singing tonight.
 ?She might dance too.

He rather supports that the disjuncts in (17) form a set and *or* selects a member of that set i.e. either Gertrude or Abigail. There is no introduction, however, for a referent for Gertrude or Abigail in the DRS but rather the predicate *sing* combines directly with the function on the set that consists of the discourse referents standing for Gertrude and Abigail. The denotation of this disjunction is the union of the subset of the disjuncts.

(18)

x, y, f
$gertrude(x)$
$abigail(y)$
$SUB(f)$
$sing(x, f \cup \{x, y\})$

In the following example there are two interpretations: the ‘exclusive’ *or* interpretation (e.g. ‘Grant is taller than Abigail or Grant is taller than Gertrude’ and the ‘and-coordinate’ *or* interpretation, which states that for “all choice functions f Grant is taller than $f\{\text{Gertrude, Abigail}\}$ ” (Eggert 2002:111).

- (19) Grant is taller than Abigail or Gertrude. (Eggert 2002:110)

Both of these interpretations have the following DRS:

(20)

x, y, z, f
$grant(x)$
$abigail(y)$
$gertrude(z)$
$SUB(f)$
$taller(x, f \cup \{y, z\})$

(Eggert 2002:135)

Depending on the assignment of $f(y,z)$, the DRS can be interpreted either way. The first interpretation follows from:

(21) $f(y,z) = \{\{abigail\}\}$
 $f(y,z) = \{\{gertrude\}\}$

which are both subsets of $f(y,z) = \{\{abigail\}, \{gertrude\}\}$. The second interpretation follows from $f(y,z) = \{\{abigail\}, \{gertrude\}\}$, which is a possibility since $\{\{abigail\}, \{gertrude\}\} \subseteq \{\{abigail\}, \{gertrude\}\}$.

The difference in interpretations is achieved by adopting the partition analysis of plurals (Schwarzschild 1996), which claims that the collective and distributive semantic difference in sentences comes from a contextually determined variable, a partition on the universe of discourse (Schwarzschild 1996). In the example above, the variable partitions *abigail and gertrude* into one cell in which case we get the collective reading in the second case, whereas in the first reading the variable partitions *abigail and gertrude* into two separate cells.

4 Analysing Verb Agreement in Disjunctive Coordinate Nouns

We formalise the above concepts in λ -DRT and Glue Semantics, following Dalrymple (2001) and Kokkonidis (2005). The different λ -DRT expressions which correspond to the meaning parts will be combined together using the glue language.

We take the following simple example which shows either singular or plural verb agreement:

(22) Jane or Mary is/are singing.

We treat *or* as a subset function, which ranges over the set of disjuncts. *Or* is represented with the complex type $e \rightarrow (e \rightarrow e)$ since it functions over individuals and has the following lexical entry with the relevant DRS.

- (23) (\uparrow CONJ)= ‘or’
 or: $e_{\uparrow subj} \multimap [e_{\uparrow subj} \multimap e_{\uparrow subj}]$

$$\lambda x. \lambda y. \frac{\frac{f, x, y}{SUB(f)}}{f \cup \{x, y\}} \cup y \cup x$$

The important remark in the DRS side is that there is no introduction of a new referent introduced by $f\{x,y\}$ but only the subset function is introduced. The glue side states that two semantic resources are required of type e , which are members of the set and they are represented by the $(\uparrow \in)_{\sigma < e >}$ symbol which corresponds to each argument. Once these are found, they are consumed and therefore we can deduce the semantic resource of the whole coordinate phrase, represented as $\uparrow_{\sigma < e >}$.

The lexical entries for the proper names, which are also of type e , and the verbal one-place predicate, which is of type $e \rightarrow t$, are the following:

- (24) (\uparrow PRED)= ‘jane’
 jane: $e_{\uparrow subj}$

$$\lambda x. \frac{}{jane(x)}$$

- (25) (\uparrow PRED)= ‘mary’
 mary: $e_{\uparrow subj}$

$$\lambda y. \frac{}{mary(y)}$$

- (26) (\uparrow PRED)= ‘sing’
 sing: $e_{(\uparrow SUBJ)} \multimap t_{\uparrow}$

$$\lambda x'. \frac{}{sing(x')}$$

If we do the union of *or* with *Jane* we get:

- (27)

$$\lambda y. \frac{\frac{f, x}{SUB(f)}}{f \cup \{x, y\}} \cup y \cup \frac{x}{jane(x)}$$

$$: e_{\uparrow sub} \multimap e_{\uparrow sub}$$

If we do the union of *or Jane* with *Mary* we get:

(28)

$$\begin{array}{|c|} \hline f, x, y \\ \hline SUB(f) \\ \hline f \cup \{x, y\} \\ \hline \end{array} \cup \begin{array}{|c|} \hline y \\ \hline mary(y) \\ \hline \end{array} \cup \begin{array}{|c|} \hline x \\ \hline jane(x) \\ \hline \end{array}$$

: $e_{\uparrow sub}$

If we do the DRS unions, we get:

(29)

$$\begin{array}{|c|} \hline f, x, y \\ \hline SUB(f) \\ \hline f \cup \{x, y\} \\ \hline jane(x) \\ \hline mary(y) \\ \hline \end{array}$$

: $e_{\uparrow sub}$

Next we need to apply the verb *sing* to the disjunctive coordinate phrase to get the desired result:

(30)

$$\begin{array}{|c|} \hline f, x, y \\ \hline SUB(f) \\ \hline f \cup \{x, y\} \\ \hline jane(x) \\ \hline mary(y) \\ \hline sing(f \cup \{x, y\}) \\ \hline \end{array}$$

: t

The above DRS represents the whole sentence which is of type t .

This simple approach, which uses λ -DRT, accounts for a simple disjunctive phrase which results in singular or plural verb agreement and which treats individuals of type e necessarily. Further work is required to account for disjunctive phrases with more than two disjuncts and include other types.

5 Conclusion

The current paper has presented an analysis of verb agreement in disjunctive coordinate nouns. The analysis has focused on the hypothesis that verb agreement in such phrases depends strictly on interpretation factors and this is why agreement is relatively unpredictable. Our field work shows that MG native speakers interpret disjunctive coordinate phrases in two ways, as ‘exclusive’, admitting singular verb agreement, and as ‘and-coordinate’, admitting plural agreement. The same

hypothesis applies to other languages too. A similar assumption is found in Eggert (2002), who supports that there are discourse factors in determining the ‘semantic number’ of an argument in a coordinate phrase. Thus, following Eggert (2002), we also assume that *or* is a subset function which means that it is a function from sets to subsets, and we propose an analysis on λ -DRT, a discourse-based framework. Although the current analysis captures disjunctive coordinate nouns of type *e*, there is room for more research in order to extend the analysis to other types (i.e. nouns with in/definite determiners or predicates) and also to disjunctive phrases with more than two disjuncts.

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