Turkish disjunctions and the morphological realization of *exh*

1. Exhaustification, ignorance, and cognitive architecture: Chierchia, Fox and Spector (2009) (among others) present evidence that a covert syntactic operator, *exh*, accounts for scalar implicatures (SIs). As emphasized by Fox (2007, 2014), this 'grammatical theory of implicatures' is naturally coupled with a simpler quantity maxim, one that is free from formal restrictions on alternatives. Under this view, pragmatic reasoning only generates ignorance inferences. This architecture differs from the competing Neo-Gricean theory (e.g., Sauerland, 2004), under which a formally restricted quantity maxim is responsible for both ignorance implicatures and SIs (more precisely, it is responsible for primary implicatures, which can be strengthened to secondary implicatures and ignorance implicatures with further pragmatic assumptions; this technical detail is irrelevant to our main point). These views make competing predictions about possible languages. Under the grammatical view, because *exh* is in the grammar, there could be languages that mark its presence or absence in their overt morphology:[+*exh*] marking would produce a necessarily exhaustified meaning, and [−*exh*] marking would produce a necessarily unexhaustified meaning, and hence such sentences could only generate ignorance inferences. Such a language seems impossible under the neo-Gricean view, as the difference between ignorance inferences and SIs is a matter of various steps in pragmatic reasoning, and it is hard to see how morphology could reference such information. Building on Mekik (2015), we present evidence that Turkish disjunctions morphologically express the mandatory presence/absence of *exh*.

2. Turkish disjunctions: Turkish has many forms for expressing disjunctions; we mention three that are particularly relevant. The form *A veya B* is, like English *A or B*, ambiguous between an inclusive and exclusive disjunction. This form, like English, does not overtly mark whether it should be understood as exhaustified. However, two other forms do. The form *ya A ya B* is understood as an exclusive disjunction. Crucially, *ya* does not mean 'only'; rather, *ya...ya* is a complex disjunction, similar to *soit...soit* in French and *ka...ka* in Japanese (see Spector, 2014; Tieu et al. 2015). Such complex disjunctions are necessarily exhaustified (Spector, 2014). Turkish also has a disjunction that marks the necessary absence of *exh*: the form *A ya da B* marks a necessarily inclusive reading, and furthermore strongly signals that the speaker is ignorant about whether *A* is true and about whether *B* is true. In section 4 below we present further evidence that clarifies these judgments. It might be useful to first spell out our assumed connection between these LFs and their overt realizations.

3. Parsing and *exh*: Psycholinguistic studies have presented evidence that participants cluster into those that typically compute implicatures, and those that typically don't (e.g., Noveck and Posada, 2003). Building on these studies, we propose that there are two ways of parsing an arbitrary sentence: (i) `Exhaustified`: Parse every constituent in the sentence with *exh* (Magri, 2009, 2011), (ii) `Logician`: Parse no constituent in the sentence with *exh*. In English, as with Turkish *A veya B*, the form does not specify which of these strategies applies, and the listener therefore has to decide which strategy to pursue. However, the other two forms overtly fix one of these parsing strategies: Turkish *ya...ya* signals that the LF is the `Exhaustified` parse, and Turkish *ya da* marks that the LF is the `Logician` parse.

4. Further empirical evidence: We turn to more evidence that *ya..ya* and *ya...da* fix one or the other of the two parses spelled out above. First, in response to the question in (1), (1a) is infelicitous because it is uninformative (the question presupposes that at least

one of Ali or Ayşe went), but (1b) is appropriate because it eliminates one of the cells of the partition (that both Ali and Ayşe went).

(1)   Partiye Ali mi Ayşe mi hem Ali hem Ayşe mi gitti?
        'Did Ali or Ayşe or both Ali and Ayşe go to the party?'

a.   [#] Ali **ya da** Ayşe gitti.
b.   **Ya** Ali **ya** Ayşe gitti.
        'Ali or Ayşe went.'

Both (1a) and (1b) are appropriate, however, if the question is changed to *which, if any, of Ali or Ayşe went to the party?*; this question allows for the possibility that neither Ali nor Ayşe went, and thus both of (1a) and (1b) are informative answers to this question. We note that *A veya B* is an appropriate response to both questions; this is like English *A or B* (under appropriate placement of pitch accent).

An important piece of evidence for *exh* is the existence of embedded scalar implicatures— these are not predicted by the competing Neo-Gricean theory (though cf. Bergen et al., in press). The conditions under which embedded *exh* is preferred remain unclear (Geurts and Pouscoulous, 2009; Chemla and Spector, 2011; Chemla & Singh, 2014). However, certain environments demand embedded *exh*. In particular, disjunctions in which one disjunct entails the other, so-called Hurford disjunctions, are odd (e.g., # *Mehmet was born in Istanbul or Turkey*), but the predicted oddness of some Hurford disjunctions can be obviated if embedded *exh* is assumed: the fact that *some or all politicians are orators* is not deviant can be explained if the first disjunct can be parsed with *exh* (see Chierchia, Fox, and Spector, 2009 for much discussion and references).

Our proposed parsing principles from section 3 make a clear prediction (again, building on Mekik, 2015): disjunctions like *some or all* in Turkish should be odd with *ya da*, since *exh* is disallowed, but such sentences should be okay with *veya* (which allows *exh*) and with *ya...ya* (which demands *exh*). This prediction is correct:

(2)   a.   **Ya** bazı **ya** tüm siyasetçiler hatiptir.
        b.   [#] Bazı **ya da** tüm siyasetçiler hatiptir.
        c.   Bazı **veya** tüm siyasetçiler hatiptir.
                'some or all politicians orators are'

Third, we correctly predict that the text 'A or B, and possibly both' is felicitous only when *veya* is used: *ya...ya* implies the negation of 'A and B' and the text is thus inconsistent, and *yada* implies that the speaker is ignorant about 'A and B' and the text is thus redundant.

Finally, embedding these disjunctions under *every* has the predicted effects: *[Every X [A veya B]]* is many-ways ambiguous, like English *[Every X [A or B]]*; *[Every X [ya-A ya-B]]* is interpreted as *[Every X [A exclusive-or B]]*; and *[Every X [A ya da B]]* is understood without any strengthening, and signals that the speaker is ignorant about the truth-value of 'Every X A' and of 'Every X B'.

5. Concluding remarks: We presented evidence that Turkish disjunctions morphologically mark the presence of absence of *exh*. We proposed that this possibility is predicted under the grammatical theory but seems hard to make sense of under neo-Gricean approaches.