Hurford disjunctions without Hurford's Constraint

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Abstract. Hurford disjunctions are disjunctions in which one disjunct entails another. Some of these are perfectly natural while others seem infelicitous, at least out of context. The predominant approach to this phenomenon relies on Hurford's Constraint, which states that such disjunctions are generally bad, together with the grammatical approach to exhaustivity, according to which, in the felicitous cases, local exhaustification of the disjuncts is available to break the inter-disjunct entailment. An alternative, inverse approach has not been seriously explored: to take the felicitous cases as basic, refrain from adopting HC, and try to rule out the infelicitous cases by other means. This paper develops this inverse approach, and offers a thorough theoretical-conceptual comparison of both approaches, touching on central topics such as the pragmatics-grammar debate surrounding exhaustivity, the status of Hurford's Constraint as a derivative of considerations of redundancy, which semantics for disjunction to adopt, and constraints on sets of alternatives.

Keywords: Hurford's Constraint, disjunction, redundancy, exhaustivity, alternatives

1 Introduction

Hurford disjunctions, after Hurford 1974, are disjunctions in which one disjunct entails the other. Some of these are fine while others are strange, at least out of context:

(1) a. Alf has two or four kids.
b. Beth read some or all of the books on this shelf.
c. Gemma is having dinner with Alf, with Beth, or with both.

(2) a. # Alf studied in France or Paris.
b. # The painting is of a man or a bachelor.
c. # The value of x is different from 6 or greater than 6.

The predominant approach in the literature (Hurford 1974, Gazdar 1979, Chierchia et al. 2009, Katzir & Singh 2014, Mayr & Romoli 2016, Marty & Romoli 2022) assumes the following general rule to capture the infelicitous cases, and tries to explain the felicitous cases as some kind of exception to that rule:

- **Hurford's Constraint (HC):** disjunctions are infelicitous if one disjunct entails the other.

The felicitous cases are explained, on this approach, by assuming that those disjunctions are somehow interpreted as *exclusive* disjunctions (following a suggestion by Hurford 1974), paraphrasable for instance as follows:

(3) Beth read some-but-not-all, or all of the books on this shelf.

Since on this reading the disjuncts are mutually exclusive, there is no longer an entailment relation between them, and the example ceases to violate HC.

In principle there is an inverse to this approach: faced with the felicitous cases, one might not adopt a general ban like HC (Potts 2013), and instead try to account for the infelicitous cases by other means; perhaps something else goes wrong in (2), not the entailment relation as such. This inverse approach has not been pursued in any detail. The aim of the present paper is to mend this gap in the literature, by developing such an alternative and comparing it to the predominant HC-based approach.

The topic of Hurford disjunctions is closely related to exhaustivity: the phenomenon whereby, roughly, saying one thing comes to imply the negation of some alternative. For instance, the exclusive interpretation paraphrased in (3) is one where the weaker disjunct *some* receives an exhaustive interpretation (*not all*). Moreover, an obvious effect of adding a stronger disjunct like *or all* is to prevent an exhaustive interpretation for the utterance as a whole:

(4) a. Beth read some of the books on this shelf. $\rightsquigarrow$ not all
b. Beth read some or all of the books on this shelf. $\not\rightsquigarrow$ not all

There are, broadly speaking, two general approaches to exhaustivity: the grammatical approach assumes the existence of covert grammatical operators which make exhaustive interpretations available (Chierchia et al. 2012), while the pragmatic approach tries to do without such operators by relying more on general principles of cooperative conversation (associated with Grice 1975, Gazdar 1979, Horn 1984; see also Schulz & van Rooij 2006, Geurts 2011, Westera 2022). The HC-based approach to Hurford disjunctions has come to be firmly rooted in the grammatical approach (e.g., Singh 2008, Chierchia et al. 2009, Gajewski & Sharvit 2012, Sauerland 2012, Katzir & Singh 2014, Mayr & Romoli 2016, Marty & Romoli 2022), whose exhaustivity operators can save a disjuntion from violating HC. The inverse, non-HC-based approach, as we will see, is tied instead to the pragmatic approach, in particular Schulz & van Rooij 2006, Westera 2022. The availability of a viable pragmatic approach means that the phenomenon of Hurford disjunctions does not constitute the argument for embedded exhaustivity and the grammatical approach that it has been made out to be (recently in, e.g., Marty & Romoli 2022).

The grammatical approach to exhaustivity and Hurford disjunctions will be summarized in section 2, the pragmatic approach in section 3. The core of the paper is section 4, which compares how the two approaches relate to the important notion of *redundancy* (Katzir & Singh 2014, Mayr & Romoli 2016, Ciardelli & Roelofsen 2017, Marty & Romoli 2022). The predominant justification for adopting HC is that entailing disjuncts are informationally redundant (e.g., $p \vee (p \wedge q) \equiv p$), so the inverse approach, which does not adopt HC, needs to explain when and why this justification falls short. Building on the insight in Ciardelli & Roelofsen 2017 that what exactly counts as 'redundant' depends on the granularity of one's semantics, we will see that several theoretical choices concerning Hurford disjunctions and exhaustivity are deeply connected: whether to assume the general validity of Hurford's Constraint, whether to adopt a grammatical or pragmatic approach to exhaustivity, and what kind of semantics to adopt. Section 5 will address several important open ends from the earlier sections, that both approaches more or less share. For instance, given that both approaches (as we will see) ultimately explain the infelicity of certain basic Hurford disjunctions in terms of the underlying sets of alternatives, what might prevent the accommodation of a more suitable set? These open ends will not be conclusively resolved, but the extensive discussion can provide a roadmap for future work on both approaches. Section 6 concludes.

2 The grammatical approach to exhaustivity, and Hurford disjunctions

2.1 The basics

In the grammatical approach, exhaustivity is assumed to be delivered by covert operators in the logical form (LF). To illustrate, consider this (non-Hurford) disjunction, with its hypothesized logical form including exhaustivity operators *O* on the disjuncts:[1]

(5) Gemma is having dinner with Alf, or with Beth.
LF: Gemma is having dinner *O*(with Alf), or *O*(with Beth).

This predicts an exclusive disjunction reading, paraphrasable as *only Alf, or only Beth*, i.e., *not both* (and if a third individual, Gemma, was relevant too, then this would also predict *not Gemma*).

Two important questions for the grammatical approach will not play a role in this paper, but are worth mentioning. The first is which pragmatic or grammatical principles might govern the placement of exhaustivity operators. Below we will see that HC itself is arguably one such principle, but beyond that there seems to be

1 The precise placement of the operators *O* will depend on one's assumptions about, e.g., ellipsis or the scope-taking behavior of disjunction. These details can be set aside for present purposes.

little consensus in the literature. Another example is the Strongest Meaning Hypothesis (Dalrymple et al. 1998), which would mandate the inclusion of *O* in (5), thus enforcing an exclusive reading (for discussion see Chierchia et al. 2012, Mayr & Romoli 2016). The second important question is where the alternatives come from that are excluded by the exhaustivity operators. Most work in the grammatical approach assumes that alternatives are mechanistically generated by the grammar and subsequently filtered by more pragmatic considerations such as relevance and complexity (e.g., Fox 2007a, Katzir 2007, Singh 2008, Magri 2009, Fox & Katzir 2011, Chierchia et al. 2012. The assumed extent of pragmatic influence on grammatically generated alternatives varies – Chierchia et al. (2012) for instance hint at the possibility that relevance might have no role to play at all, while in Katzir 2007 the set of generated alternatives is so unrestricted that context-dependent notions of complexity and relevance do most of the work. As we will see, some open questions for the pragmatic approach are shared by the grammatical approach, but only to the extent that pragmatics can affect the alternative sets on which the grammatical approach relies, and the latter question will be left unresolved in this paper.

2.2 Hurford disjunctions in the grammatical approach

Not much else is needed for the grammatical approach to extend to basic, felicitous Hurford disjunctions like (1c), repeated here with its hypothesized logical form:

(6) Gemma is having dinner with Alf, with Beth or with both.
LF: *O*(Gemma is having dinner with Alf), *O*(with Beth) or *O*(with both).

Just as before, the operators *O* render the disjuncts mutually exclusive (*only-Alf*, *only-Beth*, *both-Alf-and-Beth*), but here this does not result in a globally exclusive (i.e., *not both*) interpretation as in (5), as a consequence of the third disjunct. Moreover, the predicted contrast between (6) and (5) holds up even if we consider the possibility of having an additional exhaustivity operator taking scope over the whole utterance, provided we assume (as is customary) that *O* obtains its alternatives compositionally including the effects of operators in its scope, and that *O* is vacuous if excluding all alternatives would lead to a contradiction (see Fox 2007a for details).

Note that the Hurford disjunction in (6) would violate HC *unless* its disjuncts are exhaustified in this way. Local exhaustification thus explains why Hurford disjunctions can in principle be felicitous despite HC. Another way to frame this is that HC can effectively make the insertion of local exhaustivity operators mandatory. In this way, felicitous Hurford disjunctions continue to be seen as a powerful argument for the existence of embedded, grammatical exhaustivity to begin with (Chierchia et al. 2009, Singh 2008, Chierchia et al. 2012, Gajewski & Sharvit 2012, Sauerland 2012, Katzir & Singh 2014, Mayr & Romoli 2016, Marty & Romoli 2022).

Important empirical motivation for the foregoing approach, based on HC and local exhaustification, is the perceived correlation between the (in)felicity of a Hurford disjunction and the (non-)exhaustivity of its weaker disjunct in isolation. For instance, the utterances in (7), which are simply the weaker disjuncts of (1) taken in isolation, have an exhaustive interpretation implying the negation of what is the stronger disjunct in (1):

(7) a. Alf has two kids. $\rightsquigarrow$ not three, not four, ...
b. Beth read some of the books on this shelf. $\rightsquigarrow$ not all
c. Gemma is having dinner with Alf or with Beth. $\rightsquigarrow$ not both

By contrast, the utterances in (8), which are the weaker disjuncts of the infelicitous Hurford disjunctions in (2), do not normally imply the negations of the stronger disjunct:

(8) a. Alf studied in France. $\not\rightsquigarrow$ not in Paris
b. The painting is of a man. $\not\rightsquigarrow$ not of a bachelor
c. The value of x is different from 6. $\not\rightsquigarrow$ not greater than 6

The grammatical approach lets us explain this correlation as causation: the Hurford disjunctions in (1) are felicitous precisely *because* their weaker disjuncts permit exhaustive interpretation, which enables them to comply with HC; and the Hurford disjunctions in (2) are bad precisely *because* exhaustification of the weaker disjunct is unavailable there, meaning it cannot be saved from HC. Now, correlation does not imply causation, but the postulated causality does give the approach explanatory appeal.

As a final illustration (which will also be relevant in the context of the pragmatic approach, as we will see), consider an example with so-called 'distant entailing disjuncts' (Fox & Spector 2018; see also, e.g., (7) in Chierchia et al. 2009), such as in (1a), repeated here with operators O:

(9) Alf has two or four kids. $\rightsquigarrow$ not *just* three; $\not\rightsquigarrow$ not four
LF: Alf has O(two) or O(four) kids.

Crucial about these kinds of examples is that there is an intermediate proposition, between the weaker and the stronger disjunct, that is relevant and whose exclusion has an effect on the overall truth conditions, i.e., *not just three*. The locally exhaustive interpretation of the first disjunct amounts to *two-and-not-three*, which together with the second disjunct (*or four*) implies *not only three* (i.e., either two or four). Thus, the grammatical approach correctly predicts that, although *or both* cancels a globally exclusive reading (i.e., *not both*), partial exhaustivity effects can remain present.

2.3 What causes the variation in exhaustivity to begin with?

Having explained the variation in felicity of Hurford disjunctions in terms of the variation in availability of exhaustive readings, the next question is what causes the latter. Two types of approaches are possible in principle, that I will term the *no-alternatives* approach and the *too-many-alternatives* approach – although, to my awareness, only the latter has been seriously pursued.

The no-alternatives approach assumes that the disjuncts in the infelicitous cases (2) are not suitable alternatives, due to which the weaker disjunct cannot be exhaustified to exclude the stronger, and the example cannot be rescued from HC. This may be quite intuitive for (10), for instance, repeated from earlier, where *France* denotes a country but *Paris* a city, which are arguably different cognitive levels of categorization (see section 5.1):

(10) # Alf studied in France or Paris.

The idea can be found already in the more pragmatic literature (see section 3), e.g., Gazdar (1979) proposes that Hurford disjunctions are infelicitous if the disjuncts are not members of the same 'scale'. Nevertheless, this approach is not widely adopted within the grammatical approach, to my understanding because it is difficult to argue conclusively that two things are not alternatives, and especially that they cannot even be *accommodated* as alternatives. That is, threatened by infelicity, why couldn't addressee reason that the speaker must have intended for the disjuncts to be alternatives, and proceed on that basis?

The too-many-alternatives approach, instead, assumes that the propositions in the infelicitous cases may well be alternatives of each other, the real problem is that too many *other* propositions are alternatives as well (Fox 2007b, Singh 2008, Katzir 2013, Ciardelli & Roelofsen 2017). The reasoning is that, if France and Paris are alternatives, then so are all other places in France, such that exhaustifying the disjunct *France* would lead to the exclusion not just of Paris but of all other places in France as well, resulting in a contradiction: one cannot be from France and not from any place in France. As a consequence, no exhaustivity operator can be applied to *France* (or, alternatively, the operator will be vacuous because no place in France is 'innocently excludable'; Fox 2007a), and the Hurford disjunction as a whole is left violating HC.

The too-many-alternatives approach seems incomplete in the same way as the no-alternatives approach: threatened by infelicity, why couldn't we accommodate a more suitable set of alternatives? Although, as mentioned before, work in the grammatical approach varies in the extent to which alternatives are mediated by pragmatics, the possibility that pragmatics could at least *filter* the set of alternatives implies that the 'too many alternatives' approach is incomplete, and the same holds

for the 'no alternatives' approach if context can not only remove alternatives but also add them, or at least appear to do so (as in Katzir 2007).

As we will see in section 3, the pragmatic approach to exhaustivity invites essentially the same two approaches to infelicitous Hurford disjunctions – no-alternatives and too-many-alternatives – and faces the same open question of why no suitable set of alternatives can be accommodated in the infelicitous cases. I return to this (mostly) shared issue in section 5).

3 Pragmatic approaches to exhaustivity and Hurford disjunctions

3.1 The standard pragmatic recipe for exhaustivity, and why Hurford disjunctions pose a challenge

The standard pragmatic recipe for exhaustivity is as follows (e.g., Horn 1972, Gazdar 1979, Geurts 2011): if a speaker could have relevantly asserted something more informative, but didn't, then by the conversational maxim of Quantity (Grice 1975) we infer that the speaker must not have the belief that it is true. If, in addition, we assume that the speaker is opinionated about the matter, we can conclude that the speaker must believe it to be false. To illustrate, consider this non-Hurford disjunction:

(11) Alf was at the protest, or Beth. $\rightsquigarrow$ not both

Assuming *both were there* would have been relevant too, and that the speaker is opinionated about this possibility, the standard pragmatic recipe correctly predicts that, according to the speaker, not both were there.

The standard pragmatic recipe for exhaustivity is well-known to fall short on Hurford disjunctions:

(12) Alf was at the protest, or Beth, or both.

Because *or both* does not (at least not without grammatical exhaustification) change the information expressed (as $p \vee (p \wedge q) \equiv p$), and because the maxim of Quantity is sensitive only to informational strength, the standard pragmatic recipe is blind to the difference between this Hurford disjunction with *or both*, and the non-Hurford variant in (11).

Different authors have recognized the problem posed by Hurford disjunctions, and have taken steps towards a (more-or-less) pragmatic solution (Gazdar 1979, Schulz & van Rooij 2006, Alonso-Ovalle 2008, Van Rooij 2017, Westera 2022). For instance, Gazdar (1979) proposes that utterances have 'clausal implicatures' to the effect that a speaker should be uncertain about any embedded clause of an uttered sentence, e.g., the disjuncts of a disjunction. Indeed, if the speaker must be uncertain about the disjunct *or both*, we cannot conclude that they believe *not both*. Gazdar

seeks to derive these 'clausal implicatures', in turn, from the maxim of Quantity, combined with the assumption that both the embedded clause and its negation are relevant: the speaker's uncertainty about the truth of the embedded clause then follows from the fact that the speaker asserted neither the embedded clause nor its negation. Despite being intuitive, this approach has not been widely adopted or spelled out in detail. Schulz & van Rooij (2006) rightly note that indiscriminately predicting ignorance about disjuncts is too simple, and assuming the simultaneous relevance of both positive and negative propositions is generally problematic in light of the well-known 'symmetry problem' (Kroch 1972, Breheny et al. 2018) as well as prosodic focus (Westera 2017). Attempts to formalize Gazdar's ideas have resulted in exhaustivity 'operators' (Schulz & van Rooij 2006, Alonso-Ovalle 2008) that, while able to deliver the right exhaustivity effects in a global, utterance-level way (by virtue of being sensitive to the disjuncts), are not backed by a complete pragmatic explanation (Westera 2022). Nonetheless, the shared understanding is that, somehow, pragmatics has to be made sensitive not just to the informational content of the sentence as a whole, but also to the individual disjuncts.

3.2 A recent, disjunct-sensitive pragmatic approach

In Westera 2022 it is argued that Gazdar's approach does not go far enough: not only should pragmatics be made sensitive to the disjuncts, it is also precisely this sensitivity that is responsible for exhaustivity in the first place, bypassing the standard recipe of Quantity plus opinionatedness altogether. In a nutshell, this would be necessary because exhaustivity arises in circumstances where nothing is being asserted for Quantity to apply to, such as questions (13) (e.g., Geurts 2011, Biezma & Rawlins 2012; and Hurford effects appear in questions too, Ciardelli & Roelofsen 2017), in situations in which an assertion is made but it is not subject to the maxim of Quantity, such as hints (14) (Fox 2014), and in situations where the speaker's opinionatedness is explicitly not assumed (15) (adapted from Westera 2014; for corroborating experimental results see Dieuleveut et al. 2019):

(13) Was Alf at the protest, or Beth? (not both)

(14) Quizmaster: (Of these three boxes over here,) there is money in box A or in box C. *(implied: not in both, and not in B)*

(15) A: I *may* be asking the wrong person — you probably don't know this — but (of these five people) do you have any idea who was at the picnic?
B: Alph, Beth and Gemma. *(implied: no one else)*

I refer to Westera 2022 for the details of these arguments and possible ways in which the standard pragmatic recipe for exhaustivity may cope with them, and how the

grammatical approach may deal with these data as well. The present paper will focus on the implications of this approach for the topic of Hurford disjunctions, which have thus far been explored only for basic, felicitous cases.

The approach to exhaustivity in Westera 2022 is based on the idea that, besides conveying information, speakers actively direct each other's attention to possibilities (building on Ciardelli et al. 2009, 2014), subject to certain pragmatic constraints. More precisely, on top of the well-known Gricean, information-governing maxims, which require that a speaker share *all and only relevant propositions they believe to be true*, an analogous set of attention-governing maxims (A-maxims) is defined, which require that a speaker *draw attention to all and only relevant propositions they consider possible*. These A-maxims are defined as follows (using intensional logic with doxastic modality and set-theoretical shorthands, the same formalism used in Westera 2022), relative to a QUD Q (set of propositions), for an attentional intent A (set of propositions to which the speaker intends to direct attention, typically the disjuncts, see below):

i. $\text{A-Quality}(A) = \forall a(A(a) \rightarrow \Diamond^{\vee} a$ (simplified version; see below)
"Direct attention only to propositions that you consider possible."

ii. $\text{A-Relation}(A, Q) = \forall a(A(a) \rightarrow Q(a))$
"Direct attention only to propositions in the QUD."

iii. $\text{A-Quantity}(A, Q) = \forall a\left(\left(\begin{array}{c}\text{A-Quality}(\{a\}) \wedge \\ \text{A-Relation}(\{a\}, Q)\end{array}\right) \rightarrow A(a)\right)$
"Direct attention to as many propositions as the other maxims allow."

(For reasons of exposition the maxim of A-Quality is simplified here, the full version to be given further below.) This set of maxims systematizes a long strand of approaches recognizing that pragmatics ought to be sensitive to (something like) the disjuncts/attention. Functionally equivalent versions of A-Quality have been assumed by many (e.g., Ciardelli et al. 2009, Zimmermann 2000, Biezma & Rawlins 2012; and a similar intuition underlies Gazdar's (1979) clausal implicatures discussed above) and likewise for A-Relation (e.g., Simons 2001, Biezma & Rawlins 2012), the latter informally already in Grice 1989, who states that disjunction specifies possibilities that relate in the same way to a given topic. See Westera 2022 for more detailed motivation and a more precise comparison to existing proposals, as well as proofs of partial conservativeness with regard to exhaustivity operators in the literature.

In this approach, exhaustivity derives from A-Quantity, which can be paraphrased as follows: draw attention to all relevant propositions you consider possible (to be slightly revised below, with the complete version of A-Quality). To illustrate, consider the following examples, assuming that each draws attention to propositions

corresponding to the disjuncts (more about that assumption, and its relation to semantics, in section 4), and that the QUD is the typical focus-congruent set of propositions of the shape *X was at the protest*, closed under conjunction.

(16) a. Alf was at the protest.
b. Alf was at the protest, or Beth.

Attentional Pragmatics predicts the following exhaustivity inferences through the maxim of A-Quantity. In (16a), the speaker did not draw attention to Beth's presence, and since that would have been relevant, it must be because the speaker does not consider it possible: hence the implication *Beth wasn't there*. In (16b), attention is drawn to Alf's presence and Beth's presence, but not to their joint presence, which again must be because the speaker does not consider it possible: thus the exclusive reading *not both*.

3.3 Application of the pragmatic approach to Hurford disjunctions

Recall that the definition of A-Quality above is simplified for the sake of exposition. Nevertheless, for Hurford disjunctions like the following, the above maxims already deliver the right (non-)exhaustivity effects:

(17) Alf was at the protest, or Beth, or Alf and Beth.

Here, attention is drawn to all three propositions, so neither is excluded – although other propositions still may be (e.g., if Gemma protesting had been relevant too, the implication *not with Gemma* would be predicted). For other variants, however, the above maxims do not quite work.

(18) Alf was at the protest, or both Alf and Beth.

By A-Quality, this speaker should consider Alf's presence possible, as well as Alf and Beth's joint presence. It follows that they also consider Beth's presence possible, hence by A-Quantity, the speaker should have drawn attention to it – but she didn't. Intuitively, the reason this speaker did not draw attention to Beth's presence separately (by adding *or Beth*) is because they do not consider Beth's presence independently possible, i.e., only her joint presence with Alf. It seems, therefore, that we should refine A-Quality (and thereby A-Quantity, which refers to it) to demand not mere possibility, but possibility independently of anything stronger to which attention is drawn. The full version of A-Quality from Westera 2022 implements this idea:

- A-Quality$(A) = \forall a(A(a) \rightarrow \Diamond({}^{\vee}a \wedge \forall b((b \subset a \wedge A(b)) \rightarrow \neg {}^{\vee}b))$
"Direct attention only to propositions that you consider possible, or more

> precisely, possible independently of anything stronger to which you direct attention."

(And A-Quantity should accordingly be read as: draw attention to every relevant proposition you consider possible independently of anything stronger to which attention is drawn.) With the full version of A-Quality, the Hurford disjunction in (18) can comply with the A-maxims, in which case the correct exhaustivity effects are predicted: that the speaker considers Alf's presence, but not Beth's, possible independently of their joint presence (so either only Alf is there, or both Alf and Beth). The following Hurford disjunctions are also treated correctly:

(19) a. Alf was at the protest, or Alf, Beth and Gemma.

b. Alf was at the protest, or Alf and Beth, or Alf, Beth and Gemma.

Note that (19a) is analogous to the earlier example (9) with 'distant entailing disjuncts' (Fox & Spector 2018): the second disjunct entails the first, but there are some relevant propositions in between, such as Alf and Beth attending. Assuming again that attention is directed to each of the disjuncts, and relative to the same kind of QUD, both utterances can comply with the A-maxims, in which case the right exhaustivity effects are predicted. For instance, (19a) implies that either only Alf was there, or all three of them, but no mere two individuals (or attention should have been drawn to such propositions); (19b) implies that either only Alf was there, or Alf and Beth (whose joint presence must now be considered possible independently of Gemma's), or all three of them. In both cases the full version of A-Quality is necessary.

In Westera 2022, the crucial, second part of A-Quality is given pragmatic motivation in terms of attentional economy: thinking of the propositions to which attention is drawn as live discourse goals (i.e., those propositions ought to be made common ground if true), it is simply unnecessary to keep track of a goal g in addition to a more specific goal h', if you know that g will automatically be achieved, and can only be achieved, by achieving h'. Interestingly, the second part of A-Quality is essentially a weaker version of Hurford's Constraint: whereas Hurford's Constraint prohibits cases where one disjunct entails the other, A-Quality is more lenient and permits such cases, provided the weaker disjunct is at least considered possible independently of the stronger one. For this reason, whereas Hurford disjunctions violate Hurford's constraint (that is, unless saved by grammatical exhaustification), these same disjunctions do not necessarily violate A-Quality. I discuss further implications of this difference in detail in section 4.

3.4 How the pragmatic approach might explain the varying felicity of Hurford disjunctions

Pragmatic approaches to Hurford disjunctions have focused on predicting the right exhaustivity effects, and have not, to my awareness, attempted to explain why some Hurford disjunctions should be felicitous and others infelicitous (an exception is the proposal in Gazdar 1979, that the relevant expressions in a Hurford disjunction should be members of the same 'scale'). Recall from section 2.3 that the grammatical approach to exhaustivity seeks to explain the varying felicity of Hurford disjunctions in terms of variation in exhaustification, and the latter, in turn, in terms of properties of alternative sets. There, I distinguished the *no-alternatives* approach from the predominant *too-many-alternatives* approach, noting that neither explains why, in the case of infelicitous Hurford disjunctions, no suitable, different set of alternatives could be accommodated. As it turns out, the pragmatic approach to exhaustivity offers essentially the same outlook, albeit by substituting the term 'QUD' for 'set of alternatives': If the two disjuncts are no alternatives, i.e., do not both correspond to alternatives in the QUD, then the utterance violates A-Relation (and the many analogous constraints in the literature before it). If instead there are too many alternatives, then the utterance violates A-Quantity, because attention should have been drawn to at least some of them.

To illustrate the latter, consider again our basic infelicitous example, and let us assume too-many-alternatives, i.e., that the QUD contains all other places in France as well:

(20) Alf studied in France or Paris.

By A-Quality, the speaker must consider Alf having studied in France possible independently of Alf having studied in Paris, and this implies that the speaker considers at least one *other* place in France possible. But since no attention is drawn to any such place, the utterance violates A-Quantity. Moreover, if the speaker had drawn attention to all other possibilities (e.g., by saying *Alf studied in France, or Toulouse, or Nice, or Paris*) then the utterance would have violated A-Quality, because in that case they cannot consider France possible independently of the various more specific alternatives to which attention is drawn.

Let us also consider an utterance of the weakest disjunct in isolation:

(21) Alf studied in France.

If we assume the same type of QUD, containing both countries and cities, then a violation of A-Quantity is again predicted: assuming the speaker spoke truthfully (Gricean Quality), the speaker must consider some place in France possible, but has drawn attention to none. However, in this case this does not lead to infelicity, because in the absence of *or Paris* it is easy to accommodate a simpler QUD, for instance

containing only countries, relative to which the utterance is perfectly fine. Moreover, relative to such a QUD no exhaustive reading like *France but not Paris* is predicted. This is how the pragmatic approach accounts for the correlation between infelicity of Hurford disjunctions and the lack of an exhaustive reading for the weaker disjunct: both are independent consequences of the fact that Paris and France are problematic as alternatives (whether in the form of no-alternatives or too-many-alternatives).

Note that the causal arrows in the pragmatic explanation are somewhat different from the grammatical approach, where, recall, the correlation is explained as causation. That is, the grammatical approach takes the infelicity of a Hurford disjunction to be caused by the unavailability of an exhaustive reading (and that, in turn, by no-alternatives or too-many-alternatives). In the pragmatic approach, by contrast, infelicity and the unavailability of an exhaustive reading are both explained as independent consequences of a common cause: that France and Paris are no suitable alternatives (due to either no-alternatives or too-many-alternatives). Both approaches thus rely on the same assumption about alternatives, but rely on a different pathway to the relevant consequences.

Two main open ends remain. First, this section covered only the basic cases, leaving some interesting cases, especially those involving embedding, to section 4.4. As we will see there, the similarities between the pragmatic and grammatical approaches do not end here, and we will see some interesting differences as well. Second, neither the pragmatic approach nor the grammatical approach currently explains why, threatened by infelicity, no suitable set of alternatives could be accommodated. I return to this in section 5.

4 Four key points regarding HC, redundancy and the pragmatics/grammar debate

A crucial notion in the literature on Hurford disjunctions is *redundancy*. This section compares how the two approaches to exhaustivity and Hurford disjunctions relate to that notion, and how they can deal with several empirical puzzles surrounding it. Section 4.1 notes (following Ciardelli & Roelofsen 2017) that the explanatory potential of HC depends on the granularity of one's semantics, and relates this to the fact that the pragmatic approach to exhaustivity crucially requires a semantics that is too fine-grained for HC. Section 4.2 clarifies that the central question is not whether redundancy has a role to play, but what role(s) exactly; indeed, various Hurford-esque redundancy considerations are available to the pragmatic approach even if HC itself is not. Section 4.3 casts some doubt on the idea that redundancy is the right starting point to begin with, even for the basic infelicitous Hurford disjunctions. Section 4.4 argues that what counts as redundant can depend on the (embedding)

context, and shows how this lets the pragmatic approach straightforwardly explain the infelicity of certain embedded Hurford disjunctions.

4.1 The plausibility of HC depends on the granularity of one's semantics

Many authors have sought to derive HC from considerations of redundancy (e.g., Singh 2008, Katzir & Singh 2014, Mayr & Romoli 2016, Ciardelli & Roelofsen 2017): if one disjunct entails the other, then the stronger disjunct is redundant, for it could have been omitted without a change in basic semantic meaning. Various proposals exist with regard to the precise characterisation of redundancy. For Katzir 2007, a sentence contains a redundancy if the sentence can be structurally simplified while maintaining its meaning (taking into account contextual information); in Katzir & Singh 2014, redundancy is characterized in terms of contextual equivalence between constituents in the sentence, checked only at the 'molecular' level of binary operators; in Mayr & Romoli 2016, redundancy is defined as (or slightly generalized to) contextual triviality (tautology/contradiction) with respect to a local context (Schlenker 2009). For a detailed discussion of these variants I refer to Marty & Romoli 2022, who note that there is currently no consensus about the details (and I will discuss some of their challenging examples later on); here I will be discussing only the central tenet which all of these characterizations of redundancy share: that one disjunct entailing the other, as in the basic Hurford cases, would be bad.

As Ciardelli & Roelofsen (2017) note, whether a disjunct like *or both* is really redundant depends on the richness, or granularity, of one's semantics. If one's semantics is so coarse-grained as to not see a meaning difference between disjunctions with and without *or both*, then the disjunct *or both* is redundant. But if one's semantics is more fine-grained, such that *or both* does make a difference to the meaning, this is no longer the case. This is depicted in figure 1, for a Hurford disjunction like (1c), *Gemma is having dinner with Alf, with Beth, or with both.*, schematically $a \vee b \vee (a \wedge b)$. Classical (information-only) semantics assigns the same meaning to both $a \vee b$ and $a \vee b \vee (a \wedge b)$ (figure 1a.), as captured by the absorption laws of classical logic. The same is true in *Inquisitive Semantics* (Ciardelli et al. 2013), because its meanings are 'downward-closed' sets of propositions, which effectively causes non-weakest disjuncts like *or both* to always, inevitably be there in the semantics, hence to have no meaningful contribution: Inquisitive Semantics assigns the meaning in figure 1b. to both $j \vee b$ and $j \vee b \vee (j \wedge b)$. Accordingly, adopting either classical semantics or Inquisitive Semantics would commit one to assuming that HC – conceived of as a derivative of redundancy considerations – should generally hold. By contrast, as Ciardelli & Roelofsen (2017) note, *Alternative Semantics* for disjunction is defined such that all (distinct) disjuncts matter semantically, not just the weakest ones (e.g., Alonso-Ovalle 2008; the same is true for an 'unrestricted'

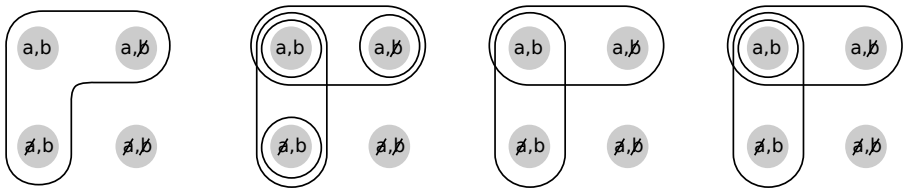

Figure 1 Classical semantics assigns the same meaning to both $a \vee b$ and $a \vee b \vee (a \wedge b)$ (figure a.). Likewise for Inquisitive Semantics (figure b.), due to *downward closure*. By contrast, Alternative Semantics does assign different meanings to $a \vee b$ (figure c.) and $a \vee b \vee (a \wedge b)$ (figure d.).

variant of Inquisitive Semantics, Ciardelli 2009). Accordingly, adding *or both* does make a semantic difference: Alternative Semantics assigns to $a \vee b$ the meaning in figure 1c., and to $a \vee b \vee (a \wedge b)$ the meaning in figure 1d. Thus, Ciardelli & Roelofsen (2017) conclude, whether HC can be explained as a derivative of considerations of redundancy depends on one's assumptions about the semantics of disjunction.

Now, the argument in Ciardelli & Roelofsen 2017 was motivated by the observation that Hurford-effects seem to appear on questions, too:

(22) # Did Alf study in France, or Paris?

In this light, they frame the relation between redundancy and semantic granularity as an argument for an Inquisitive Semantic treatment of questions: assuming that the HC-based approach to Hurford disjunctions is on the right track, and assuming that HC derives from considerations of redundancy, then for it to generalize to questions the meanings of questions should be downward-closed sets of propositions. But the argument can also be inverted: if for any reason a more fine-grained semantics such as Alternative Semantics turns out to be necessary, then that will rule out a HC-based approach to Hurford disjunctions, at least if we wish to maintain its explanatory potential.

The foregoing has clear consequences for the pragmatics/grammar debate surrounding exhaustivity. In Westera 2022, and its various antecedents mentioned in the previous section, it is argued that a pragmatic approach to exhaustivity requires access to the individual disjuncts, crucially including the non-weakest disjuncts of Hurford disjunctions, like *or both*: if the pragmatics does not 'see' that attention is drawn to this additional possibility, the theory will wrongly predict its exclusion (*not both*). Because of this, the pragmatic approach to exhaustivity cannot work on the basis of either classical or Inquisitive Semantics. Indeed, the required attentional intents (sets of propositions to which attention is drawn) are broadly in line with, and at least as fine-grained as, Alternative Semantics (Westera 2022). Accordingly,

the pragmatic approach cannot justify appeals to HC in terms of redundancy, and, in the current absence of alternative possible explanations for HC, should not assume its general validity. (And this in turn means that the pragmatic approach needs a different explanation for *infelicitous* Hurford disjunctions, one which is not based on HC; see Section 3.4.) More generally, we see that several theoretical choices concerning Hurford disjunctions and exhaustivity are deeply connected: whether to assume the general validity of Hurford's Constraint, whether to adopt a grammatical or pragmatic approach to exhaustivity; and whether to adopt a coarse-grained or fine-grained semantics.[2]

4.2 The question is not whether redundancy has a role to play, but how redundancy should be defined

Although within the pragmatic approach, redundancy cannot be used to motivate HC, redundancy in general can still play various roles, also in explaining phenomena that in the literature have been connected to Hurford disjunctions. For instance, conjunctions do not introduce alternatives in either semantic framework (basic, Inquisitive or Alternative Semantics), so the infelicity of a conjunction like the following can be explained, in both approaches alike, in terms of the redundancy of one of the occurrences of *Alf*:

(23) # Alf was there, and both Alf and Beth were there.

For the same reason, existing analyses of the following well-known contrast (e.g., Mayr & Romoli 2016) can in principle be maintained regardless of one's semantic framework:

(24) a. Either there is no bathroom, or (there is one and) it is upstairs.
b. If there is a bathroom, (# there is one, and) it is upstairs.

This is thought to show that the relevant notion of redundancy must be sensitive to incremental processing, with disjunction and implication, despite their truth-conditional equivalence, being different in the local context they create, against which their second clause is evaluated (see Katzir & Singh 2014, Mayr & Romoli 2016; building on Schlenker 2009). Thus, considerations of informational redundancy in Hurford-like *conjunctions*, which occupy a considerable part of the literature on Hurford disjunctions, can in principle be maintained regardless of the semantic framework chosen, hence regardless of one's approach to exhaustivity.

2 And note that the latter choice extends to theories in other domains, also for phenomena unrelated to exhaustivity: if any phenomenon, even unrelated to exhaustivity, turns out to require a semantics as fine-grained as Alternative Semantics, it would render a redundancy-based HC unavailable across the board. I will not explore this angle at present.

Disjunctions, too, can contain redundancies regardless of the granularity of one's semantics, either as such (25a), or given contextual knowledge (25b):

(25) a. # Alf was there, or Beth, or Alf, or both.
b. *(The speaker knows that if Beth was there, then all three of them were)*
Alf was there, or Alf and Beth, or Alf, Beth and Gemma.

In (25a) one of the two occurrences of *Alf* fails to make a semantic contribution in classical, Inquisitive and Alternative Semantics alike. In (25b), the second disjunct *Alf and Beth* is intuitively redundant because the speaker does not consider it possible independently of the third, and this too can be explained by either approach, although in this case the explanations are subtly different. In the grammatical approach the infelicity of (25b) could be explained by noting that, after local exhaustification of the disjuncts, the middle disjunct (paraphrasable as *only Alf and Beth*) is inconsistent with contextual knowledge (that then Gemma should be there too), and an inconsistent disjunct is redundant ($p \vee \bot$ being equivalent to simply p). In the pragmatic approach of Westera 2022, the infelicity of (25b) would be a consequence of the utterance violating the second part of the maxim of A-Quality, namely that any proposition in the attentional intent be deemed possible independently of any stronger proposition(s) included: redundancy at the attentional level.

Summing up, the choice of semantic framework and the associated choice between the pragmatic and the grammatical approach to exhaustivity, correlate not with the question of whether redundancy has a role to play, but rather which role(s) exactly, and in which kinds of examples. As we will see in section 4.4, this will be particularly relevant when considering certain embedded Hurford disjunctions.

4.3 Redundancy alone may not suffice even for basic infelicitous cases

As we have seen, the pragmatic approach to exhaustivity relies on a fine-grained semantics, due to which it cannot justify HC in terms of redundancy. Accordingly, the pragmatic approach cannot appeal to HC to explain why certain Hurford disjunctions are infelicitous. The current subsection highlights several examples that suggest we may need an alternative explanation regardless, also within the grammatical approach. Keeping the current section focused on redundancy, I will explore some possible explanations in the discussion (section 5).

For instance, infelicitous Hurford disjunctions like *Paris or France* can be repaired by turning them into what Marty & Romoli (2022) call 'quasi-Hurford disjunctions', which are felicitous (and satisfy HC) but still have an informational redundancy:

(26) Alf studied in Paris or somewhere else in France.

As noted in Katzir & Singh 2014, the qualifier *somewhere else in* is informationally redundant, because the disjunction as a whole is equivalent to *Paris or France* regardless – indeed, the disjunction as a whole is equivalent even to *France* alone – and yet the example is perfectly felicitous. Katzir & Singh (2014) conclude from this that the relevant notion of redundancy applies not globally to the utterance as a whole, but locally: one disjunct is redundant if it entails the other. This is an ad-hoc restriction of the notion of redundancy, making the supposed redundancy-based explanation little more than a reformulation of HC itself.

A contrast discussed in Marty & Romoli 2022 likewise casts some doubt on the idea that redundancy is really what matters. The authors call the first a 'long distance Hurford disjunction' (not to be confused with 'distant entailing disjuncts' from Fox & Spector 2018, an example of which I discussed in section 2), the second a 'clausal quasi-Hurford disjunction':

(27) a. # Alf studied in France, or he studied in London or in Paris.
b. Alf studied in Paris, or he studied in France but not in Paris.

As noted in Marty & Romoli 2022, HC in its original form is not enough to explain the infelicity of (27a), as no disjunct entails another. If we seek to explain the infelicity in terms of redundancy, then the likely culprit is the nested disjunct *or in Paris*, which can be omitted without changing the overall meaning (as $p \vee (q \vee r) \equiv p \vee q$ if r entails p). However, refining the redundancy criterion (and HC) to capture the infelicity of (27a), by prohibiting the embedded disjunct *or in Paris* on account of it being globally redundant, will incorrectly predict (27b) to be infelicitous as well, because it has a very similar structure: the constituent *not in Paris* makes no contribution to the overall meaning (as $p \vee (q \wedge \neg p) \equiv p \vee q$, and, since studying in Paris p entails studying in France q, this is even contextually equivalent to simply q). Now, Marty & Romoli (2022) note that (27b) could in principle be rescued from such a refined HC by checking redundancy *after* grammatical exhaustification (in which case the extra disjunct essentially blocks a globally exhaustive reading), but the same reasoning would then incorrectly render (27a) felicitous too. I omit the technical details here (see Marty & Romoli 2022), and focus on the main take-away: that the contrast in (27) has thus far resisted characterisation in terms of a notion of redundancy. More specifically, the felicity of (27b), like that of the earlier (26), suggests that redundancy in itself does not cause infelicity.

To clarify, the foregoing arguments are relevant mainly for the grammatical approach, because from the perspective of the pragmatic approach this much was already known: without assuming local, grammatical exhaustification to rescue certain disjunctions from HC, even the basic felicitous Hurford disjunctions are essentially counterexamples to the idea that informational redundancy would cause infelicity, and to HC itself (Potts 2013).

Speaking of the basic cases, Singh notes that a minimal variant of the basic case *Paris or France* seems infelicitous in the same way, but in this case neither disjunct entails the other:[3]

(28) # Alf studied in Russia or Asia.

In light of this example, Singh proposes to strengthen HC to rule out not just entailing disjuncts, but also disjuncts that are merely consistent with each other. Although such a strengthened version of HC could indeed rule out (28), this suggestion has not, to my awareness, been subsequently adopted, and it is difficult to see how it could still be understood as a derivative of considerations of informational redundancy.

Summing up, this subsection reviewed several examples that are felicitous despite having an informational redundancy, and one example that shows Hurford-esque infelicity despite lacking such a redundancy. While some of these observations could perhaps by captured by refining HC, this would amount to giving up its redundancy-based motivation, and the contrast in (27) would remain unaccounted for. Now, this is not to say that redundancy considerations have no role to play, and it remains to be seen how for instance a non-HC-based approach might account for the various infelicitous cases (some embedded cases in the next subsection; more general discussion in section 5), but it does cast some doubt on HC-based approaches. The foregoing also calls into question the argument in Ciardelli & Roelofsen 2017 for Inquisitive Semantics over the more fine-grained Alternative Semantics: if HC cannot be derived from genuine considerations of semantic redundancy to begin with, as the examples in this section seem to suggest, then the question of whether to adopt HC becomes (more) independent of the question which semantics to adopt.

4.4 What counts as redundant can depend on the (embedding) context

Even if we adopt a fine-grained semantics and, therefore, cannot assume the general validity of HC, one would still expecte it to operate in contexts that are insensitive to this fine granularity, say, contexts in which only the classical, informational content matters. This predicts that a Hurford disjunction that is felicitous when unembedded, can become infelicitous when embedded under certain operators. And that is what we find: Gajewski & Sharvit (2012) observe that embedding under negation (and other constructions, see below) can render an otherwise felicitous Hurford disjunction, infelicitous (except when read meta-linguistically, with the disjunction as a whole essentially being a quotation):

(29) a. The boss, her assistant, or both, disappeared.

3 This judgment is not the same for all speakers; a Russian informant tells me that the example is perfectly fine. I think such variance in judgments is potentially revealing, and I return to it in section 5.1.

b. # It isn't true that the boss or her assistant, or both, disappeared.

I will discuss Gajewski & Sharvit's (2012) own solution to this puzzle below, which is based on the grammatical approach (hence a coarse-grained semantics), but first look at this from the perspective of a fine-grained semantics. In standard Alternative Semantics, negation is known to 'flatten' the set of propositions introduced by a disjunction into a singleton set containing just its classical, informational content (e.g., Ciardelli 2009). Hence, even though in Alternative Semantics, a disjunct like *or both* can make a fine-grained semantic contribution in principle, thus explaining why (29a) is felicitous, no such contribution matters under negation, thus explaining why (29b) is infelicitous. Basically, since in a fine-grained semantics the sole purpose of *or both* is to introduce a proposition to the set, it becomes infelicitous whenever such propositions do not matter.

To further illustrate this idea, clause-embedding verbs may render Hurford disjunctions infelicitous, but here there is more variation (again from Gajewski & Sharvit 2012):

(30) a. Alf discovered that the boss or her assistant, or both, had disappeared.
b. Alf believes that the boss or her assistant, or both, had disappeared.
c. # Alf was sorry that the boss or her assistant, or both, had disappeared.
d. # Alf doubted that the boss or her assistant, or both, had disappeared.

To generalize the above explanation for the contrast in (29) to the pattern in (30), one would have to argue that *discover* and *believe* are sensitive to the individual propositions (disjuncts) introduced in their scope, while *be sorry* and *doubt* are not (thus making *or both* redundant). This is a matter of the lexical semantics of embedding verbs, which is a complex topic in its own right (e.g., Uegaki 2015, Theiler et al. 2017).[4] In the scope of this paper I will not try to provide a definitive explanation, but only expand on the foregoing idea just enough for a meaningful comparison to the grammatical approach to be possible (notably the account of Gajewski & Sharvit 2012, summarized next). For now, note that the supposed difference in sensitivity to proposition sets, as required for a redundancy-based explanation for the contrast in (30), is not entirely counterintuitive from a pragmatic perspective: *discover* and *believe* are readily used for introducing a new piece of evidence/information to the discourse, in which case the status of more specific pieces of evidence/information (i.e., the disjuncts) would naturally matter; *be sorry* and *doubt* seem to express attitudes, rather, about an already given piece of information, in which case (the same attitude about) more specific pieces of information may not

4 It is worth highlighting that whether proposition sets matter for an embedding predicate seems to some degree independent of whether they permit wh-complements, as the latter can be additionally affected by matters like presuppositions; e.g., in the case of *belief* (Theiler et al. 2017).

typically be relevant. Before returning to this idea, let us consider the grammatical approach.

The grammatical approach, too, predicts that a disjunct like *or both* is redundant in certain embedding contexts, namely: contexts in which exhaustive interpretations do not arise. This is because, as Gajewski & Sharvit (2012) note, even if *or both* is informationally redundant in terms of the proposition that is expressed prior to exhaustification, it still serves a purpose in the overall contribution, by preventing an exhaustive (*not both*) interpretation (as summarized in section 2). And this predicts that *or both* can become infelicitous when embedded: it cannot fulfil its role of preventing an exhaustive interpretation if no exhaustivity would arise in the given embedding context to begin with. For the various clause-embedding verbs in (30), Gajewski & Sharvit (2012) motivate this by the observation that the felicity of *or both* in an embedded clause correlates with the presence of an exhaustive interpretation of the embedded clause without *or both*:

(31) a. Alf discovered that the boss or her assistant had disappeared.
$\rightsquigarrow$ Alf discovered that not both had disappeared

b. Alf believes that the boss or her assistant had disappeared.
$\rightsquigarrow$ Alf believes that not both had disappeared

c. Alf was sorry that the boss or her assistant had disappeared.
$\not\rightsquigarrow$ Alf was sorry that not both had disappeared.

d. Alf doubted that the boss or her assistant had disappeared.
$\not\rightsquigarrow$ Alf doubted that not both had disappeared.

e. It isn't true that the boss or her assistant disappeared.
$\not\rightsquigarrow$ It isn't true that not both disappeared (i.e., it is true that both disappeared).

This would be expected if the only purpose of *or both* were to cancel exhaustivity.

Now, could it be that the very same contexts in which exhaustivity arises – hence in which *or both* can serve a purpose according to the grammatical approach – are also contexts in which the individual disjuncts matter, that is, contexts in which *or both* can serve a purpose according to the fine-grained semantics on which the pragmatic approach relies? This seems plausible at least on the surface, given that, for the pragmatic approach, unembedded exhaustivity arises from reasoning about similar sets of propositions (i.e., attentional intents). If so, then the grammatical and pragmatic approaches predict exactly the same (in)felicity pattern for embedded Hurford disjunctions. Moreover, both do so by appealing to the (non-)redundancy of *or both*, but via very different routes. To recap, the pragmatic approach assumes a fine-grained semantics, hence predicts that HC is operative only in contexts where the individual disjuncts do not matter, and accordingly predicts the infelicity of *or both* in such contexts as a violation of HC. The grammatical approach is more complex: it

does assume HC's general validity, therefore needs to invoke local exhaustification to explain the felicity of *or both* in matrix clauses, as a consequence cannot rely on HC alone to explain the infelicity of *or both* in certain embedded contexts, and instead relies on an additional way in which *or both* can be redundant: as a consequence of the same coarse-grained semantics that justifies HC, the only purpose of *or both* can be to (via local exhaustification) prevent an exhaustive reading, which it cannot do in embedded contexts where no such reading arises to begin with.

If indeed the same embedding contexts in which exhaustivity arises are those in which the individual disjuncts matter, then it will be hard to empirically discriminate between the two approaches on these kinds of examples. At a more theoretical/explanatory level, a comparison of the two approaches should also take into account how the variance in exhaustivity on which the grammatical approach relies can in turn be explained: it is conceivable that the explanation must ultimately involve an appeal to the disjuncts too, e.g., that exhaustivity arises in contexts where the disjuncts are in the set of alternatives required for exhaustification. The latter is very much an open question, the definitive resolution of which falls outside the scope of this paper. I will only, in the next section, reflect on the role that monotonicity might have to play (Gajewski & Sharvit 2012, Uegaki 2015).

5 Three open ends which the two approaches (more or less) share

The preceding sections showed that, despite fundamental differences between the two approaches and their relation to redundancy, they also share certain key features and, with that, similar open ends. Three important open ends will be discussed in this section, though by no means definitively resolved.

First, although the two approaches explain the basic infelicitous cases in different ways, the explanations on both sides ultimately lean on supposed properties of the underlying alternative sets, or questions under discussion. Both approaches distinguish the *no-alternatives* case, where the disjuncts are no alternatives at all, from the *too-many-alternatives* case, in which they are but there are too many other alternatives too. In the grammatical approach, both types of alternative sets would prevent exhaustification from kicking in to save the disjunction from HC; in the pragmatic approach, these types of alternative sets would make the utterance violate either A-Relation or A-Quantity. As was pointed out, neither approach explains why no suitable set of alternatives could be accommodated for the infelicitous cases. Section 5.1 will offer some informed speculations in this regard.

Second, both approaches can explain why some (otherwise felicitous) Hurford disjunctions become infelicitous when placed under a clause-embedded predicate, in terms of the redundancy of a disjunct like *or both* in certain embedded contexts, namely contexts in which no exhaustivity arises (for the grammatical approach) and

contexts in which alternatives do not matter (for the pragmatic approach). Section 4.4 speculated that those contexts in which exhaustivity arises may be exactly those in which alternatives matter. This open question will be explored in section 5.2, by reflecting on an existing explanation for variation in exhaustivity, namely in terms of monotonicity.

Third, although section 3 showed that the pragmatic approach readily predicts the seemingly embedded exhaustivity effects of basic Hurford disjunctions, and section 4.4 showed how it may also predict the infelicity of certain embedded Hurford disjunctions, these cases constitute only a fragment of the literature on embedded exhaustivity, a pivotal topic in the pragmatics/grammar debate. Section 5.3 will offer some reflection on this topic, focusing, for reasons of scope, on (i) whether the current pragmatic approach, compared to previous work, changes the prospects of pragmatics with regard to embedded exhaustivity in general, and (ii) to what extent constraints on alternative sets, such as those arguably required for both approaches (as will be discussed in section 5.1), can be expected to carry over to embedded contexts.

5.1 Whether no-alternatives or too-many-alternatives is the culprit, why could no suitable set of alternatives be accommodated?

As mentioned above, the grammatical approach and the pragmatic approach alike rely on *too-many-alternatives* or *no-alternatives* to explain why some basic Hurford disjunctions are infelicitous, but leave unexplained why no more suitable set of alternatives could be accommodated to come to the rescue. To explore this further, consider the basic case *Alf studied in France or Paris*. It seems possible to introduce an alternative set with the help of an explicit question, relative to which the subsequent Hurford disjunction seems fine (*Europe* is included in the question just to make the disjunctive answer at least informative):

(32) Q: Did Alf study in Paris, or at least in France, or even just Europe?
A: Alf studied in France or Paris.

The intended alternative set would contain three nested propositions (Alf's having studied in Paris, in France, and in Europe), and indeed both approaches predict the answer to be fine relative to this type of alternative set. In the grammatical approach, exhaustification of the weaker disjunct relative to this set yields *France-but-not-Paris or Paris*, rescuing the disjunction from violating HC; and in the pragmatic approach the response as is can perfectly comply with both A-Relation and A-Quantity. The situation, therefore, is truly puzzling (pending a proper empirical evaluation): if (32) is indeed felicitous, then why couldn't this type of alternative set be *implicitly* accommodated to rescue basic, infelicitous Hurford disjunctions out of the blue?

(Conversely, if (32) is *not* as felicitous as it seems to me, then the puzzle is why either the question fails to introduce the intended set of alternatives, or, if it does, why the response remains infelicitous.) This is a mystery for both approaches, and my suggestions in the remainder of this subsection will be only tentative.

It seems to me that part of the explanation for some infelicitous Hurford disjunctions involves properties of our conceptual system, rather than purely logico-semantic notions. For instance, our conceptual system is organized in *levels of categorization* (Rosch et al. 1976), and contexts can differ as to what the appropriate level is – e.g., different categories are used in botany vs. amateur gardening. If two levels of categorization do co-occur in a context at all, they tend not to be relevant simultaneously, but in sequence from coarse-grained to fine-grained, e.g., we tend not to ask *Is it an oak?* unless it is first established or can be presupposed that the object in question is a tree, in accordance for instance with the strategical view of discourse in Roberts 2012. It is conceivable, therefore, that a disjunction would be strange if its disjuncts (and hence the underlying set of alternatives) mix different levels of categorization. A possible precedent for this idea is Lang 1984, in which disjunctions are said to require a conceptual 'common integrator' for the disjuncts; see Zhang 2022 for an account of Hurford disjunctions that assumes a preference for alternative sets that do not mix (something like) levels of categorization.

With this in mind, let us return to the basic felicitous and infelicitous disjunctions with which this paper started:

(33) a. Alf has two or four kids.
b. Beth read some or all of the books on this shelf.
c. Gemma is having dinner with Alf, with Beth, or with both.

(34) a. # Alf studied in France or Paris.
b. # The painting is of a man or a bachelor.
c. # The value of x is different from 6 or greater than 6.

The disjuncts in (33) arguably reside at the same level of categorization, and address a question under discussion that is quite naturally asked without first having to establish the weaker proposition: *most* and *all* are both basic, coarse proportional quantifiers, *three* and *four* are both small, non-round numerals, and *Alf* and *Beth* denote individuals who, apparently, are both related to Gemma in a way that makes them dinner candidates. But in (34) this doesn't seem to be the case, at least in (34a), where France is a country and Paris a city, and (34b), where *man* is a standard way of referring to any male person whereas *Bachelor* is about a person's marital status, which tends to be relevant only in particular contexts – and even then, one would normally not ask whether someone is a bachelor without first ascertaining (or presupposing) that the person under consideration is a man. (The 'mathematical'

example (34c) does not seem to involve levels of categorization, and I will return to it later.)

To clarify, level of categorization is not a priori fixed for each word in the lexicon, but can vary with context. For instance, the quantifier *everyone* can in principle be used to answer either a fine-grained question like *Who was there?* or a coarse-grained question like *What proportion of people were there?*. Levels of categorization can depend also on the speaker: someone who grew up in France and without ties to Asia may care more about whether a friend is in Paris or Toulouse, than about whether that same friend is in Beijing or Nanjing, or even which country in Asia, such that the following sentence will be completely fine to them (as to an anonymous reviewer):

(35) Alf studied in Paris or in Asia.

Such context-dependence and speaker-dependence is expected if broader conceptual considerations play a role in the infelicity of Hurford disjunctions, not just logical entailment.[5]

Some further evidence that levels of categorization have a role to play can be found in Baumann 2014: infelicitous Hurford disjunctions can be improved by inserting *more generally* (Baumann's (7)):

(37) It was not entirely the reality of life in Paris or in France more generally, however.

And the same seems to hold for *more specifically*; both expressions plausibly indicate a mix of, or shift between, levels of categorization. A formal treatment of such expressions lies outside the present scope; it seems that they could be analyzed either as marking the set of alternatives itself as having a mixed nature, or as marking a shift mid-utterance to a different set of (more general or more specific) alternatives, with disjunction *or* perhaps taking on a more metacommunicative role (like corrective *or*). Schlenker (2009) notes that *at least* can likewise fix Hurford disjunctions, and the same seems to hold for *even*:

(38) a. Alf studied in Paris or at least France.
b. Alf studied in France or even Paris.

These markers arguably do not indicate a shift in level of categorization, but rather a change in the 'purpose' of the categorization, namely to be able to identify John's

5 Besides individual differences in levels of categorization, speakers may of course also disagree about the precise extensions of the categories involved, but this is in principle a separate issue. Consider the following example (repeated from (28) in section 4.3), reported as infelicitous by Singh (2008), but which a Russian informant considers to be completely fine; they explained that for them, Russia is not in Asia:

(36) # Alf studied in Russia or Asia.

value on some presupposed scale (and levels of categorization adapt to the reason for categorizing; Rosch et al. 1976).[6]

Now, none of the foregoing establishes *why* mixing different levels of categorization would be so difficult as to require either an explicit prior question or explicit marking, that is, why no appropriate set of alternatives (or a shift from one set to another) could be implicitly accommodated. Perhaps such cases are only slightly odd as such, but it is the availability of a better alternative that renders it downright infelicitous. For instance, a better alternative to *France or Paris* might be *France, perhaps Paris*, where the intonation phrase break makes it easy to interpret the two parts as conjoined answers to two separate questions, in a natural strategic progression from general to specific. If so, (34a) would be infelicitous not because we cannot imagine a suitable set of alternatives – this is fairly easy after all – but because we cannot imagine why a speaker would use such a set out of context and without explicit marking, as opposed to relying on a more standard strategy. Exploring this avenue further must be left for another occasion; recall that it is an open question for both approaches.

Recognizing that these more conceptual considerations can play a role lets us approach existing puzzles in a new way, such as the following contrast from Marty & Romoli 2022, already discussed in section 4.3 as a challenge for a purely redundancy-based account:

(39) a. # Alf studied in France, or he studied in London or in Paris.
b. Alf studied in Paris, or he studied in France but not in Paris.

The infelicity of (39a) should come as no surprise; it is not really different from simply *France or Paris*, and the reason it is bad, if the foregoing is on the right track, is that it mixes levels of categorization in a way that would require explicit marking. Indeed, including such markers might somewhat improve the example, though for this to work the disjuncts Paris and France need to be adjacent:

(40) a. Alf studied in France or more specifically in Paris, or in London.
b. Alf studied in London, or in Paris or more generally in France.

Note that the original (39a) is crucially unlike the earlier example *Paris or Asia* (35), which is felicitous even without such markers, because mixing levels in that way could be reasonable for someone from France with no interest in Asian cities. The reason that this does not work for (39a), is that one would have to be interested in

6 An anonymous reviewer notes that insertion of *only* does not seem to improve Hurford disjunctions, and Singh 2008 contains a similar observation (*Is Alf from Paris? / # No, he is only from France*). This could suggest that explicit reference to a set of alternatives (*only* supposedly does; Beaver & Clark 2009) is not enough; it is really a shift in level of categorization or a change in categorization criteria that must be marked (see Winterstein 2012 for arguments that *only* does not encode scalarity).

Paris but not in any particular place in France, which is impossible since Paris is one such place. By contrast, (39b) juxtaposes *Paris* with *France-but-not-Paris*, which *is* comparable to the *Paris or Asia* case: while perhaps mixing levels of categorization, it is perfectly possible to care about Paris but not about any *other* specific place in France. It is comparable also to the felicitous 'Quasi-Hurford disjunction' *Paris or some other place in France* (26), which was discussed in section 4.3, recall, as an example showing that redundancy simply does not seem to be the issue.

We should probably not expect a single mechanism to be responsible for all Hurford-related infelicity. While in some of the examples above, mismatching levels of categorization seem to provide a convincing explanation (corroborated for instance by evidence from markers like *more generally*), in other cases redundancy seems to be clearly the culprit, notably in Hurford disjunctions with a 'logical' rather than 'conceptual' relation between the disjuncts, such as cases with *or both*, that, as we saw in section 4.4, become infelicitous when embedded in a context where *or both* cannot make a contribution. Not surprisingly, the marker *more generally* is not able to rescue these (i.e., # *or, more generally, both*). And besides redundancy and levels of categorization, there are likely other sources of infelicity. For instance, the infelicitous case *different from or greater than* (34c) does not seem to involve different levels of categorization, since both are simply precisely defined mathematical relations, that are readily used alongside each other in a mathematical discourse. Perhaps a case can be made that questions in mathematical discourse tend to be partitions, as a consequence of which *different from* and *greater than* would not normally be exactly simultaneously relevant, but only in close succession – an inquiry into mathematical discourse would be required to explore this. Two additional 'numerical' examples were pointed out to me by an anonymous reviewer:

(41) How many cookies did Alf eat?

a. # At least two or at least four.

b. # Exactly four or at least two.

For these examples, levels of categorization seem hardly relevant, an explanation will depend in part on one's semantic treatment of modified numerals. According to Coppock & Brochhagen 2013, *at least n* draws attention to propositions *at least k* for all $k \geq n$, which would make the disjunct *at least four* in (41a) not only informationally but also attentionally redundant (cf. (25) in section 4.2). Alternatively, according to Geurts & Nouwen 2007 *at least n* has an epistemic modal component, such that (41a) would come to imply ignorance about one's own epistemic state, which is implausible. As for (41b), it might be odd because one would normally establish a lower bound before considering the exact value, or because it mixes a non-modal and modal flavor (if we adopt Geurts & Nouwen's account), or because it presupposes an inexplicably privileged treatment of the number four: if other exact

values had been relevant (and deemed possible) too, then attention should have been drawn to them, which it is not (note that *at least n* on Coppock & Brochhagen's analysis draws attention not to exact values, but to lower bounds). I will not pursue these possible explanations further here, the point being, merely, that infelicity can have various causes.

5.2 Monotonicity as a possible explanation for the variation in exhaustivity (and felicity) of embedded Hurford disjunctions

Section 4.4 ended with the hypothesis that the contexts in which the individual disjuncts matter, might be exactly those in which exhaustivity occurs. If so, then the pragmatic and the grammatical approach predict the same (in)felicity pattern for embedded Hurford disjunctions: for the grammatical approach, a disjunct like 'or both' is redundant if there is no exhaustivity to cancel; for the pragmatic approach if the embedder does not care about the proposition it introduces to the proposition set. Gajewski & Sharvit (2012) propose that the variation in exhaustivity, in turn, may be explained at least in part in terms of the property of monotonicity, and a similar proposal is found in Uegaki 2015: cognitive predicates are upward-monotonic (e.g., if I know that $p \wedge q$, then I must know that p) whereas emotive factives are neither upward nor downward monotonic (e.g., if I am sorry that $p \wedge q$, I am not necessarily sorry that p, or that $p \wedge q \wedge r$). As a consequence, *I know that* $p \wedge q$ is logically stronger than *I know that* p, which in the grammatical approach to exhaustivity is a prerequisite for its exclusion: exhaustivity operators are defined so as to exclude only logically stronger alternatives. By contrast, *I am sorry that* $p \wedge q$ is not logically stronger (or weaker) than *I am sorry that* p, so exhaustifying the latter does not exclude the former.

Although this kind of relation between exhaustivity and monotonicity has long been assumed (e.g., Horn 2001), much is uncertain about the proposal in Gajewski & Sharvit 2012. One is its compatibility with Uegaki's (2015) more general theory of clause-embedding predicates: whereas Gajewski & Sharvit (2012) propose that *or both* is felicitous if it can serve to cancel local, embedded exhaustification, in Uegaki 2015 grammatical exhaustification is argued to happen only above the embedder, not in its scope.[7] Furthermore, recent work suggests that at least the relation between monotonicity/exhaustivity and the cognitive/emotive factive distinction is not quite as straightforward, judgments are graded (Cremers & Chemla 2016, Zimmermann et al. 2022), and exhaustivity effects seem context-dependent, e.g., the emotive factive *be surprised* can be used either to describe the direct, experienced content

7 The starting point in Uegaki 2015 is a so-called 'intermediately exhaustive' reading (Klinedinst & Rothschild 2011), from which a more local, 'strongly exhaustive' reading is derived indirectly by assuming the opinionatedness of the embedder's subject (i.e., the attitude holder).

of an emotional state, or an indirect, deduced content, with only the latter seeming to give rise to a strongly exhaustive reading (Theiler 2014). These complexities notwithstanding, experimental results so far are at least compatible with the idea that monotonicity matters for exhaustivity (Cremers & Chemla 2016), which makes it an important avenue to explore. Given the purpose of this paper, I will leave further empirical investigation to future work. Here, I want to reflect only briefly on the explanatory potential of monotonicity from a pragmatic perspective, in two very general points.

First, pragmatic approaches do not in fact require an entailment relation between alternatives (hence a monotonic context) in order to be able to predict exhaustivity. For instance, although the standard recipe is commonly framed as "the speaker asserted *P* but could have asserted *the more informative alternative A*, therefore…" – in which the term "more informative" is understood in terms of entailment – the following achieves the same without requiring that the alternative be more informative: "the speaker asserted *P*, but they could have provided *the alternative A in addition*, therefore…" (cf. Geurts's (2011) criticism of the notion of 'scale'). What needs to be 'more informative' than the assertion *P*, for this reasoning to be valid, is not the alternative *A* itself, but merely the result of its addition to the assertion (i.e., $P \wedge A$). The current pragmatic approach, too, can predict the exclusion of alternatives that are not informationally stronger: the maxim of A-Quantity requires that any alternative to which no attention was drawn must be deemed not independently possible, regardless of whether that alternative is weaker, stronger or logically independent of the assertion (or of things to which attention is drawn). There is, therefore, no reason why alternatives would not get excluded merely because the context is a non-monotonic one, and this calls into question the explanatory potential of monotonicity with regard to variation in exhaustivity. (Indeed, perhaps there is no such reason in the grammatical approach either: in principle, an exhaustivity operator can be redefined to work with arbitrary alternatives, not just informationally stronger ones; Westera 2022.)

Second, an implicit assumption in the monotonicity-based explanation is that monotonicity would be the only (or at least primary) relevant difference between different clause-embedding predicates; in particular, an assumption seems to be that the alternative sets for different embedders have the same structure, differing *only* in the embedder (and, hence, in the alternatives' entailment relations). But clause-embedding predicates seem to differ in the types of contexts in which they are typically used. For instance, while a natural question underlying (42a) could be 'What did Alf discover' or perhaps 'Who disappeared, as far as Alf discovered?', for (42b) a more natural question might be 'Was Alf sorry about the fact that the boss or her assistant disappeared?':

(42) a. Alf discovered that the boss or her assistant disappeared.

b. Alf was sorry that the boss or her assistant disappeared.

If endeed these sentences have different types of alternatives, then a pragmatic approach will readily predict a difference in exhaustivity effects, and it will do so regardless of monotonicity. And (unless one assumes no pragmatic intrusion into alternative sets whatsoever; cf. section 2) the same might be true for a grammatical approach – especially if, following Uegaki 2015, the exhaustivity effects of clause-embedding predicates are to be derived from exhaustification above the embedding predicate, hence relative to alternatives that can in principle depend on the embedder. In light of this, we should compare the different embedders also in contexts that enforce the same types of alternatives, for instance as follows (with all-caps indicating prosodic focus):

(43) a. (What exactly happened, based on what Alf discovered?)
Alf discovered that the BOSS or her ASSISTANT disappeared. $\rightsquigarrow$ not both
Alf discovered that the BOSS or her ASSISTANT or BOTH disappeared.

b. (What exactly happened, based on what Alf (said he) was sorry about?)
Alf was sorry that the BOSS or her ASSISTANT disappeared. $\overset{?}{\rightsquigarrow}$ not both
? Alf was sorry that the BOSS or her ASSISTANT or BOTH disappeared.

Although the context in (43b) might be somewhat unusual, imposing a kind of evidential role onto *be sorry* that it would not usually have, one would expect (43a) and (43b) to be more alike in their exhaustivity and in their tolerance for *or both*, compared to the original observation of Gajewski & Sharvit 2012. Testing this expectation must be left to future work. The point here is only to cast some doubt on an implicit assumption for the monotonicity-based explanation, namely that monotonicity would be the only substantive difference between the alternative sets for (utterances containing) different embedders.[8]

Summing up, while much remains to be investigated about monotonicity on the empirical side, from a theoretical perspective it is not clear that monotonicity should even matter (the first point above), and other possible differences between sets of alternatives conceivably matter more (second point).

8 In light of context-dependence of the exhaustivity of *be surprised* (Theiler 2014), Uegaki (2015) proposes that a monotonicity-based explanation can be maintained as long as we reanalyze *be surprised* in certain contexts as *be surprised to discover*, with the inner predicate being monotonic and an exhaustivity operator placed in between. Similarly, *be sorry* in (43b) could be analyzed as involving an implicit *Alf was sorry to discover that...*. But this approach seems dubious: the only reason for assuming such implicit material would be to maintain the monotonicity-based explanation, even though what is being manipulated in (43) is primarily the set of alternatives.

5.3 Prospects for embedded exhaustivity, and how some pragmatic constraints apply in embedded contexts

Felicitous Hurford disjunctions, embedded and unembedded, have been considered a strong argument for embedded exhaustivity and, hence, for the grammatical approach (Chierchia et al. 2012, Gajewski & Sharvit 2012, Marty & Romoli 2022): local exhaustification of the weaker disjunct would be required to prevent a violation of HC. In addition, embedded cases would require local exhaustification of the disjunction as a whole to explain why a stronger disjunct like *or both* is not redundant. These arguments for the grammatical approach, however, are contingent on the adoption of HC (hence a coarse-grained semantics, etc.; section 4). Without adopting HC, the case for local exhaustification becomes less clear, as direct judgments about embedded exhaustivity are difficult to elicit as well as difficult to interpret (e.g., Chemla & Spector 2011, Chemla et al. 2017). The latter is because the appearance of (embedded) exhaustivity can have various sources (Geurts 2011), including not only semantics, implicature and presupposition but also, for instance, typicality judgments (van Tiel 2014) and impliciture (Bach 1994; also 'explicature'). The account of Uegaki 2015, for instance, derives the apparently local exhaustivity effects of certain clause-embedding predicates from a (more) global exhaustive interpretation, by combining it with the assumption that the attitude holder (i.e., the subject of the clause-embedding predicate) is opinionated the matter, an assumption the validity of which may be more typical for some embedders than others.

Now, although at least some cases of apparently embedded exhaustivity can be directly explained by the current pragmatic approach to exhaustivity, such as the apparent local exhaustification of the weaker disjunct in unembedded Hurford disjunctions (see section 3), it remains an essentially 'global' (utterance-level) pragmatic theory, so it does not substantially change the prospects of the pragmatic approach for embedded cases more generally. Therefore, as for earlier pragmatic approaches, explaining genuine embedded exhaustivity will rely in part on alternative mechanisms such as those mentioned above (typicality etc.), and in part on (variants of) the current pragmatic principles that happen to generalize to embedded positions (for discussion see Simons 2011). To illustrate the latter (short of definitively settling this question), I will consider the generalizability of just one of the arguably pragmatic ingredients of both the pragmatic and the grammatical approach: that the disjuncts of a disjunction ought to be members of a suitable set of alternatives.

Starting with the pragmatic apparoach, recall that the aforementioned requirement is captured directly by the maxim of A-Relation (and similar constraints in the prior literature). However, since it is only the utterance as a whole that needs to be relevant, not its individual constituents, it is unclear how such a global, utterance-level constraint as A-Relation may generalize to embedded cases, in particular

cases where their (in)felicity matches that of their unembedded counterparts (e.g., Gajewski & Sharvit 2012; unlike those discussed in section 4.4):

(44) a. Beth believes that some or all of her students disappeared.
b. # Beth believes that her student is from France or Paris.

And the grammatical approach raises a similar question: although it would rule out (44b) simply by HC, which, like the considerations of redundancy that might underly it, readily generalizes to embedded cases, recall that it does require constraints on the underlying alternative sets – the same constraints, perhaps, as the pragmatic approach (see section 5.1).

Now, arguably, the requirement that disjuncts be relevant to some question or topic can generalize to embedded material. (The following presupposes, for the pragmatic approach, that the clause-embedding predicate is sensitive to the individual disjuncts, as is required by the pragmatic approach, in any case, to explain the felicity of (44a).) For belief reports, for instance, one would normally not be interested in someone's beliefs about everything all at once; they will normally only be beliefs about a specific topic/question – *What does Beth believe about everything?* is simply insufficiently specific as a conversational goal (cf. the question-sensitivity of *know* proposed in Schaffer 2007). (This is particularly clear in cases where the propositional attitude functions more like an evidential, i.e., where the main underlying question is not what someone believes, but what the world like.) Similar considerations apply to Hurford disjunctions in the antecedent of a conditional, whose (in)felicity again parallels that of their unembedded counterparts:

(45) a. If some or all of Beth's students disappeared, I'll be surprised.
b. # If Beth's student is from Paris or France, I'll be surprised.

It seems reasonable to assume that the antecedent of a conditional, like the complement of *believe*, must relate to a conceivable question under discussion (and not necessarily the actual question under discussion, addressed by the utterance as a whole). For instance, if the antecedent serves to introduce one or more hypothetical scenarios to the discourse (e.g., Kaufmann 2000, Schlenker 2009; for the sensitivity of conditionals to the individual disjuncts see Santorio 2018, Ciardelli et al. 2018), these scenarios should normally serve some purpose, e.g., correspond to different possible answers to a question (e.g., in (45a), the question of how many of Beth's students disappeared). Just as considering Beth's beliefs about everything all at once is not feasible, neither is exploring all possible scenarios about everything at once.

In sum, although only the utterance as a whole needs to be relevant to the current, actual question under discussion, certain parts of an utterance may nevertheless have to be relevant to a possible, conceivable, prior or hypothetical question under discussion. For this reason, as long as a given embedded context exhibits a sensitivity

to the individual disjuncts, considerations of relevance may apply to embedded Hurford disjunctions that are analogous to the utterance-level maxim of A-Relation, and to the underlying constraints on alternative sets likely shared by the grammatical approach. The foregoing illustrates just one way in which in principle 'global' pragmatic considerations can apply or appear to apply locally, to parts of an utterance (Simons 2006, 2011).

6 Conclusion

Hurford disjunctions remain a pivotal phenomenon in the pragmatics/grammar debate regarding exhaustivity. Sections 2 and 3 have shown that besides the predominant grammatical approach, there seems to be a feasible pragmatic approach as well. The latter implements the old idea that the disjuncts should somehow matter to pragmatics, by assuming that they contribute to an utterance's attentional intent, a separate type of speech act subject to its own set of maxims (A-Quality, A-Relation and A-Quantity). This approach was motivated in part by Hurford disjunctions, but elsewhere has been argued to solve a number of other puzzles faced by the standard pragmatic recipe as well, notably cases where exhaustivity occurs in the absence of either Gricean Quantity or an opinionatedness assumption.

With this pragmatic approach and the grammatical approach as the backdrop, section 4.1 argued that several theoretical choices concerning Hurford disjunctions and exhaustivity are deeply connected: whether to assume the general validity of Hurford's Constraint, whether to adopt a grammatical or pragmatic approach to exhaustivity, and whether to adopt a coarse-grained or fine-grained semantics. It was then clarified that some notions of redundancy can be assumed independently of this choice (section 4.2), that relying on redundancy to explain the infelicity of certain Hurford disjunctions may be problematic independently of this (section 4.3), and that even with a fine-grained semantics, HC is expected to become operative under embedding predicates that are insensitive to this fine granularity (section 4.4). The latter enabled the pragmatic approach to explain, perhaps surprisingly directly, in terms of HC, why some otherwise felicitous Hurford disjunctions can become infelicitous in some embedding contexts.

The extended discussion, finally, addressed three main open issues shared (more or less) by the two approaches. Section 5.1 proposed that cognitive/conceptual considerations (levels of categorization) could potentially explain the infelicity of some examples, though emphasizing that different Hurford disjunctions may be infelicitous for different reasons. Section 5.2 called into question an explanation for varying exhaustivity in embedded contexts based on monotonicity, concluding that, from a pragmatic perspective and perhaps more generally, it would lack explanatory value. Section 5.3 pointed out that, beyond the exhaustivity effects of basic,

unembedded Hurford disjunctions, the current pragmatic account does not change the general prospect of pragmatics for dealing with embedded exhaustivity (namely, potentially with the help various mechanisms including lexical knowledge, typicality and impliciture). It was shown that some arguably pragmatic constraints do naturally carry over to embedded contexts, in particular the idea that disjuncts ought to be construable as relevant to something like a conceivable question under discussion, on which arguably both the pragmatic approach and the grammatical approach rely.

In conclusion, although the pragmatic and grammatical approach are in certain respects fundamentally opposed, they also share certain key features and, with that, similar explanatory challenges. The availability of a pragmatic approach to Hurford disjunctions does however undercut the argument for the grammatical approach that Hurford disjunctions have been made out to be. As such, this paper should breathe some new life into pragmatic approaches to Hurford disjunctions, and it should encourage us to keep critically examining the core tenets of the predominant grammatical perspective.

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