Semantics & Pragmatics Volume 15, Article 3: 1–25, 2022
https://doi.org/10.3765/sp.15.3

# Varieties of Hurford disjunctions*

Paul Marty
*L-Università ta' Malta*

Jacopo Romoli
*Heinrich Heine Universität Düsseldorf*

Submitted 2021-09-10 / First decision 2021-12-16 / Revision received 2022-01-31 / Accepted 2022-02-11 / Published 2022-02-21 / Final typesetting 2023-10-10

**Abstract** Hurford (1974) famously observed that a disjunction is generally infelicitous if one of the disjuncts entails the other. Several accounts of Hurford's observation have been put forward in the literature, grounding the infelicity of the so-called HURFORD DISJUNCTIONS into various principles of language use. In this article, we investigate three variants of Hurford's original cases and we show that none of the major explanatory approaches to HURFORD DISJUNCTIONS captures all at once Hurford's original cases and our novel variants. We discuss the challenges raised by our data for existing approaches to informational oddness and, more broadly, for the descriptive generalization originally proposed by Hurford.

**Keywords:** Hurford disjunctions, implicatures, triviality, redundancy, theories of oddness

## 1 Introduction

Consider the following minimal pairs:[1]

(1) **Hurford Disjunction (HD) vs. Quasi Hurford Disjunction (QHD)**
  a. #John studied in Paris or in France.
  b. John studied in Paris or somewhere else in France.

* For very helpful discussion, we would like to thank Kyle Blumberg, Richard Breheny, Simon Goldstein, Matt Mandelkern, Daniel Rothschild, Philippe Schlenker, Yasu Sudo, the editor and the anonymous reviewers. This work was supported by the Leverhulme Trust Grant RPG-2018-425.

1 The contrast in (1) has been previously reported in Katzir & Singh 2014: (15), which attributes the observation to Ida Toivonen. In Section 3.1, we discuss their account and explain why it doesn't explain the infelicity of the long-distance variants we introduce below.

(2) **HD vs. QHD in downward entailing environments**

a. #Everyone who studied in Paris or in France was admitted to the program.

b. Everyone who studied in Paris or anywhere else in France was admitted to the program.

The (a)-sentences sound quite odd while their (b)-variants sound perfectly natural. These contrasts are puzzling because, in both cases, the (b)-sentence is more verbose than the (a)-sentence but otherwise contributes the same information: given that Paris is in France, (1a) and (1b) both convey that *John studied in France* while (2a) and (2b) both convey that *Everyone who studied in France was admitted to the program*. So what is the source of the contrasts between the (a)-sentences and their (b)-variants? As a starting point, we can note that, descriptively, these contrasts are in line with Hurford's 1974 original observation that a disjunction is infelicitous if one of the disjuncts entails the other. This observation, which has come to be known as 'Hurford's Constraint' (HC), is stated and further exemplified in (3).[2]

(3) **Hurford's Constraint (HC)**

A disjunction of the form $p \vee q$ is odd at a context $c$ if $p$ contextually entails $q$ or vice versa.

*Schematically*: $\#p \vee q$ in context c if $p \Rightarrow_c q$ or $q \Rightarrow_c p$.

a. #John studied in Paris or (he studied) in France.

b. #John studied in France or (he studied) in Paris.

Consider first the contrast in (1). The sentence in (1a) is predicted to be odd by HC for the first disjunct contextually entails the second. On the other hand, the variant of (1a) in (1b) escapes the scope of HC: the addition of *somewhere else* in (1b) makes it so that the first conjunct no longer entails the second. Everything else being equal, the contrast in (2) can be described in reference to HC in an analogous fashion. Essentially, the minimal pair in (2) shows that the contrast in (1) reproduces when the relevant disjuncts are embedded in a downward entailing (DE) environment such as the restrictor of *every*. As a result, HC descriptively captures the oddness of the (a)-sentences above and, subsequently, the observed contrasts with their (b)-variants. In the following, we will refer to infelicitous disjunctions like (1a) and (2a) as

2 See Gazdar 1979, Chierchia, Fox & Spector 2012, Singh 2008b, Katzir & Singh 2014, Meyer 2013, Ciardelli & Roelofsen 2017, Westera 2019 among others.

HURFORD DISJUNCTIONS (HDs) and to their felicitous variants, (1b) and (2b), as QUASI HURFORD DISJUNCTIONS (QHDs).

Since Hurford's generalization, several explanatory accounts of HDs have been put forward, all of which with the goal of deriving HC from broader considerations about informational oddness. These accounts achieve this goal by appealing to distinct notions, ultimately grounding the oddness of HDs into different principles of language use such as (1) Logical Integrity (Anvari 2018b,a), (2) Mismatching Implicatures (Singh 2010, Meyer 2013, 2014), (3) Non-Redundancy (Katzir & Singh 2014) or (4) Non-Triviality (Schlenker 2009). In Section 2, we review in turn four prominent theories of HC, each of which is based on one of these notions. While all these theories similarly succeed in explaining genuine instances of HD like (1a), we show that they make different predictions regarding the contrasts in (1)-(2) and, consequently, that these contrasts can be fruitfully used to compare the general scope of these accounts. Specifically, the contrast in (1) can be used to assess how each of the four accounts deals with the infelicity of HDs and the felicity of QHDs in the most basic cases while the contrast in (2) can be used to explore how these accounts fare in extending this distinction to DE-environments.

Our investigation shows that there are critical differences in the empirical coverage of the four theories and, crucially, that none of them can account for the full data set we discuss: the Logical Integrity approach leaves the contrasts in (1) and (2) unaccounted for; the Implicature approach accounts for the contrast in (1), but fails to extend to the contrast in (2); finally, both the Non-Redundancy and the Non-Triviality approaches capture, at least on some versions, the contrast in (1) and generalize this contrast to DE-environments like (2). As we discuss, however, these approaches quickly run into problems in predicting other variants of QHDs, like those in (4), to be infelicitous, contrary to facts.[3]

(4) **Clausal variants of QHDs**

a. John studied in Paris, or (else) he studied in France but not in Paris.
b. John studied in France but not in Paris, or (else) he studied in Paris.

In Section 3, we move to discuss two existing proposals, the molecular approach by Chierchia (2009) and Katzir & Singh (2014) and the exhaustification-

3 Some of the speakers we consulted judged (4b) slightly less felicitous than (4a), suggesting an order effect. We set aside this potential contrast here, but we note that order effects have already been discussed in relation to HDs (e.g., Schlenker 2009: pp. 34–35).

based approach by Mayr & Romoli (2016), which can be combined with either the Non-Redundancy or the Non-Triviality approach, and we show how both of them solve the overgeneration issues faced by these approaches with cases like (4). We show, however, that these solutions come with a downside as the resulting theories can no longer account for the infelicity of disjunctive sentences like (5), a phenomenon which we dub LONG-DISTANCE HURFORD DISJUNCTIONS (LDHDs).

(5) **Long-distance variants of HDs (LDHDs)**

a. #John studied in France, or (else) he studied in London or in Paris.
b. #John studied in London or in Paris, or (else) he studied in France.

In Section 4, we summarize the challenges raised by our data for existing approaches to informational oddness and critically assess the descriptive scope of HC, pointing to certain limitations and discussing their consequences (or lack thereof).

## 2 Explanatory approaches to HC and the QHD challenge

### 2.1 Logical Integrity

The first approach is based on the notion of Logical Integrity (LI), which has recently been proposed in Anvari 2018a,b. In essence, LI is a pragmatic principle which aims at capturing the unacceptability of a variety of sentences, part of which were previously subsumed under different theories such as Magri's theory of oddness (Magri 2009a,b, 2010) or *Maximize Presupposition!* (Heim 1991). The idea underlying the formulation of LI is that a sentence is deemed deviant if it contextually entails one of its logically non-weaker alternatives. In sum, this principle forces the logical relation between a sentence and its non-weaker alternatives to be preserved once contextual information is considered, hence the name of 'Logical Integrity'.

(6) **Logical Integrity** (LI, from Anvari 2018b: (5))
Let $S$ be a sentence and $S'$ be one of its alternatives. $S$ is infelicitous in a context $c$ if $S$ does not logically entail $S'$, but $S$ contextually entails $S'$ in $c$.

As a global principle, LI runs into trouble with more complex sentences, where logical integrity is preserved at the global level and yet the sentence is infelicitous. For this reason, Anvari (2018a) proposes that LI applies locally as well, and adds the projection principle in (7) so as to link local violation of LI to the status of the sentence at the global level.[4] On this version, a sentence is infelicitous if it violates LI at some local level. Since some of our test cases involve embedded instances of HDs and QHDs, we will consider the global and local versions of LI independently, as it will turn out to make different predictions in such cases.

(7) **Projection Principle** (adpated from Anvari 2018a: (59a))
A sentence $S$ is unacceptable in context $c$ if it contains a property- or proposition-denoting constituent $\pi$ which violates Logical Integrity in its local context with respect to one of its alternatives $\pi'$.

As discussed in Anvari 2018b: Section 2.4, LI can account for the deviance of genuine instances of HDs. Consider for instance the sentence in (1a). This sentence contextually entails one its alternatives, namely *John studied in France*, yet it does not logically entail it. It is so because the entailment relation between (1a) and *John studied in France* only holds on the assumption that Paris is in France, which is a contextual assumption, not a logical truth. As a result, (1a) is correctly predicted to be infelicitous by LI. More generally, we can observe that any simple disjunctive sentence of the form $\ulcorner p^+$ or $p\urcorner$ or $\ulcorner p$ or $p^{+}\urcorner$, where $p^+$ contextually but not logically entails $p$, violates LI and is thus predicted to be infelicitous by (6).

However, we observe that LI fails to extend to minimally different HD cases. In particular, it cannot account for the oddness of the HDs in (8), where the entailment to *John is in France* is not just contextual, but also logical.[5]

(8) #John is in a big city in France or is in France. ✗LI

4 This move also has repercussions on how to conceptualize LI, from a global pragmatic principle to a condition that applies locally to parts of a sentence. See Anvari 2018a for discussion, and Singh 2008a for a similar move with respect to *Maximize Presupposition!*.

5 Thanks to two anonymous reviewers for insightful discussion of these cases. We report here two additional points they made in connection to (8). First, one may wonder whether the entailment between (ia) and its simpler alternative (ib) is really logical. After all, dropping that assumption would allow LI to explain the oddness of (8). This move, however, would also create novel problems: if (ib) is not logically entailed by (ia), then (ia) is incorrectly predicted to be odd by LI.

(i) a. John is in a big city in France.
b. John is in France.

Moreover, we observe that, on certain assumptions about alternatives, LI is unable to distinguish QHDs from HDs. To illustrate, consider the QHD in (1b). Just like (1a), (1b) has *John studied in France* as an alternative.[6] As before, this alternative is contextually, yet not logically entailed by its base sentence. Hence, (1b) is also predicted to be deviant, this time contrary to facts.

(1b) John studied in Paris or somewhere else in France. ✗LI

a. Logic: (1b) $\not\Rightarrow$ John studied in France
b. Context: (1b) $\Rightarrow_c$ John studied in France

Turning now to the contrast in (2), LI makes different predictions in these cases depending on whether the principle applies only globally, or also locally, via (7). However, in either case, the contrast is left unexplained. To see this, suppose first that LI applies globally, at root level. At this level, LI is obeyed because both (2a) and (2b) logically entail the alternative *Everyone who studied in France was admitted to the program*, and therefore both sentences should be fine. Alternatively, suppose that LI also applies locally, in the restrictor of *every*. The sentences embedded in the restrictor of *every* — i.e., *$x$ studied in Paris or ($x$ lives somewhere else) in France* — contextually, yet not logically entail the alternative *$x$ studied in France*, and consequently both (2a) and (2b) should be deviant.

---

Second, one reviewer suggested that LI may in fact apply to 'logical skeletons' of the LF of a sentence, of the type proposed in Gajewski 2002 (see also Chierchia 2013 and Magri 2009a). This is an interesting option, but we shall leave its exploration for future work.

6 This follows from the common view that any 'simplification' of a sentence, in the sense of Katzir (2007), qualifies as an alternative to that sentence. In the case of (1b), this partly depends on the underlying syntactic structure one assumes. We go back to this question below in 2.3. For now, consider the clausal variant in (4a): this sentence can, rather uncontroversially, be simplified into *John studied in France* which, therefore, counts as an alternative.

A reviewer pointed out that, if we assume, as we do, that *John studied in France* is an alternative to (1b), then LI also incorrectly predicts a sentence like (ia) to be infelicitous in a context where it is common ground that John studied in France, since (ia) would be contextually entailed (but not logically entailed) by the corresponding alternative in (ib).

(i) a. Mary is unaware that John studied in Paris or somewhere else in France.
b. Mary is unaware that John studied in France.

If one takes these observations to show that *John studied in France* should not be considered as an alternative to (1b) on this approach, then the over-generation issues we outlined above would not arise. This move, however, puts the burden on a theory like LI to spell out the theory of alternatives it should be based on and how it would prevent *John studied in France* to be an alternative to *John studied in Paris or (he studied) somewhere else in France.*

In sum, the Logical Integrity approach accounts for the infelicity of (1a) and, on its local version, for the infelicity of (2a). However, it fails to capture the contrast in (1) and, on both its versions, for the contrast in (2) in predicting either both (2a) and (2b) to be good (Global version), or else both of them to be bad (Local version).

### 2.2 Mismatching implicatures

The second approach is based on the long-standing observation that disjunctive sentences of the form ⌜$p$ or $q$⌝ give rise to speaker-oriented ignorance inferences about $p$ and about $q$ (e.g., Gazdar 1979).[7] A common way to analyze these inferences is to treat them as Scalar Implicatures (SIs) and derive them either from pragmatic principles (a.o., Gazdar 1979, Sauerland 2004, Fox 2007, 2016), or in the grammar (Meyer 2013, 2014). On the pragmatic account, these implicatures can be derived by assuming some version of Grice's Cooperation Principle like (9).

(9) **Cooperation Principle** (à la Fox 2007)
Let $S$ be any sentence used by speaker $s$ in context $c$, and $R = \{r_1, \ldots, r_n\}$ be the set of propositions relevant in $c$. Then, for any proposition $r_i \in R$ whose truth-value is left undetermined by $[\![S]\!]$, we get $I_s(r_i)$.

Following (9), in hearing a sentence $S$, hearers derive ignorance inferences about all sentences that are relevant to the purpose of the conversation, but whose truth values are not logically determined by $S$. Applying this principle to a sentence like (10) allows us to generate the ignorance inferences we were looking for. A similar outcome obtains on the grammatical account of ignorance inferences.

(10) John speaks French or Japanese.

a. $R = \{$John speaks French, John speaks Japanese, $\ldots\}$
b. $[\![(10)]\!] \not\Rightarrow [\![\text{John speaks French}]\!]$
c. $[\![(10)]\!] \not\Rightarrow [\![\text{John speaks Japanese}]\!]$

By Cooperation: $I_s$(John speaks French), $I_s$(John speaks Japanese)

Crucially, proponents of both views have argued that, unlike genuine SIs, the ignorance implicatures associated with simple disjunctive sentences cannot be cancelled in normal speech situations as neither of the independent dis-

7 Here, we use $I_s(p)$ as an abbreviation for 'the speaker $s$ is ignorant whether $p$'; as usual, for any agent $x$, $I_x(p)$ holds if and only if $x$ doesn't believe $p$ and $x$ doesn't believe $\neg p$.

juncts can be pruned from the set of relevant propositions.[8] As Singh (2010) discusses, this proposal is supported for instance by the infelicity of sentences like (11):

(11) #I speak French or Japanese.

On the assumption that everyone knows what languages they speak, this sentence gives rise to ignorance implicatures that conflict with common knowledge. The fact that (11) is perceived as infelicitous (unless one removes the above assumption) suggests that the conflicting ignorance inferences cannot easily be cancelled. Following up on these observations, Singh (2010) and Meyer (2014) show that the presence of ignorance inferences can explain the oddness of HDs for cases like (1a). In particular, a sentence like (1a) is predicted to give rise to the implicature that the speaker is ignorant whether John studied in France, which in turn contradicts the contextual entailment of (1a) that the speaker believes that John did.[9,10]

(1a) #John studied in Paris or in France. ✓SI

a. Contextual entailment: $K_s$(John studied in France)
b. Implicatures:
$I_s$(John studied in France),
$I_s$(John studied in Paris)

This approach further accounts for the contrast between HD and QHD in (1): the ignorance implicatures associated with the sentence in (1b) are, by contrast, consistent with all its contextual entailments. Specifically, the sentence in (1b) is predicted to convey that the speaker believes that John studied in France, while implicating that the speaker is ignorant as to where in France John studied, consistent with speakers' intuitions.

8 For explicit statements concerning why disjunctions readily give rise to ignorance inferences in run-of-the-mill contexts, see Gazdar 1979, Simons 2001, Fox 2007, Singh 2008a, Fox & Katzir 2011, Marty & Romoli 2021a,b, among others.

9 This prediction follows if we assume that the calculation of ignorance implicatures is blind to common knoweldge. This assumption fits very well with the grammatical approach. On the pragmatic approach, it forces one to adopt a principle which partly operates independently from contextual assumptions, like (9); see Magri 2009b, Meyer 2013 for discussion.

10 Chemla (2008) also proposes an analysis of these cases in terms of mismatching implicatures, adopting yet a different theory of implicatures. As he himself points out, his analysis faces the same challenges with HDs in DE contexts as those we illustrate here.

(1b) John studied in Paris or somewhere else in France. ✓SI

a. Contextual entailment: $K_s$(John studied in France)
b. Implicatures:
$I_s$(John studied in Paris),
$I_s$(John studied somewhere else in France)

However, the implicature approach does not extend to the contrast in (2): since both (2a) and (2b) logically entail that *Everyone in Paris was admitted to the program* and that *Everyone in France was admitted to the program*, no ignorance inferences are predicted to arise on the basis of these alternatives on either account. This accounts for the felicity of (2b), but leaves the infelicity of (2a) unaccounted for.

(2a) #Everyone who studied in Paris or in France was admitted to the program. ✗SI

In sum, the implicature approach predicts basic instances of HDs like (1a) to be deviant in normal conversations: these sentences give rise to ignorance implicatures that contradict the contextual entailment that the speaker believes the weaker disjunct to be true. However, it does not explain why such contrasts reproduce in DE-environments like (2), where ignorance inferences are absent.

### 2.3 Non-Redundancy

The third approach is based on Grice's (1975) *Maxim of Brevity* and relates the infelicity of HDs to a general preference for non-redundancy. The idea is that, if two sentences $S$ and $S'$ have the same contribution in context and $S'$ is structurally simpler than $S$, then the speaker should favor $S'$ over $S$ to avoid unnecessary prolixity. Following Meyer 2013 and Mayr & Romoli 2016, we can make this idea more precise by formalizing it as in (12), where the intended notion of simplification is that proposed in Katzir 2007 (see also Katzir & Singh 2008, Fox & Katzir 2011). In a nutshell, the Non-Redundancy (NR) condition compares the global meanings of two potential utterances and states that structurally less complex utterances are to be preferred over equivalent but structurally more complex ones because the former are more economical than the latter.

(12) **Non-Redundancy** (NR)
A sentence $S$ cannot be used in context $c$ if there is a sentence $S'$ s.t. $S'$ is a simplification of $S$ and $S'$ is contextually equivalent to $S$ in $c$.

a. $S'$ is a simplification of $S$ if $S'$ can be derived from $S$ by replacing nodes in $S$ with their subconstituents.

b. LFs $S$ and $S'$ are contextually equivalent with respect to context $c$ iff $\{w \in c : [\![S]\!](w) = 1\} = \{w \in c : [\![S']\!](w) = 1\}$

We shall note, however, that there is no consensus regarding the points in the structure-building process at which NR is to be checked or the characterization of the set of alternatives entering its evaluation. As discussed in Katzir & Singh 2014, the preference for non-redundancy can also be conceptualized as a ban against redundant constituents and be defined as in (13) modeled after Katzir & Singh 2014, Fox 2008. This alternative version, let us call it CNR, departs from (12) in two ways: (i) non-redundancy is now checked at the level of each constituent, and (ii) the simpler alternatives to a given constituent $X$ are restricted to those alternatives that can be derived from $X$ by replacing $X$ with one of its subconstituents.[11] Given the differences between these two versions, we shall consider them both independently.

(13) **Constituent-based Non-Redundancy** (CNR)
A sentence $S$ cannot be used in context $c$ if there is any constituent $X$ in $S$ that is contextually equivalent to one of $X$'s subconstituents.
*Schematically:* $\#S[X]$ if $X$ has a subconstituent $Y$ such that $[X] \equiv_c [Y]$

Both NR and CNR account for the oddness of HDs since, by definition, the disjunction in HDs is equivalent to the weaker disjunct alone and, consequently, to one of its subconstituents. Thus, a sentence like (1a) is redundant because, given common knowledge, it conveys the same information as the second disjunct alone, which qualifies as a contextually equivalent, simpler alternative to (1a). The same reasoning applies to (2a) with some minor differences between NR and CNR regarding the evaluation process. On NR, (2a) is predicted to be inappropriate because of the contextually equivalent simplification *Everyone who studied in France was admitted to the program*; on CNR, it is so because the disjunction embedded in the scope of *every* is con-

11 We assume a fairly standard definition of syntactic constituent, according to which a constituent is a word or a group of words that functions as a single unit within a hierarchical structure, as identified by standard tests. A subconstituent is simply a constituent which is part of a larger constituent.

textually equivalent to its second disjunct. Setting these differences aside, we can observe that any sentence containing a disjunction of the form $\ulcorner p^+$ or $p\urcorner$ or $\ulcorner p$ or $p^+\urcorner$, where $p^+$ contextually entails $p$, violates NR/CNR and, therefore, its use is deemed inappropriate by (12)/(13) (here and below we omit alternatives which do not affect the result).

(1a) #John studied in Paris or in France. ✓NR, ✓CNR

a. Simplifications = {John studied in Paris, John studied in France}
b. Subconstituents = {John studied in Paris, John studied in France}
c. Equivalence: (1a) $\Leftrightarrow_c$ John studied in France

However, NR and CNR make different predictions regarding the felicity of QHDs. On the one hand, NR predicts QHDs to be unacceptable: just like (1a), (1b) should compete with *John studied in France* and, just like (2a), (2b) should compete with *Everyone who studied in France was admitted to the program*. In fact, it follows from NR that the set of competing alternatives to a QHD should always be a superset of the set of competing alternatives to the HD it relates to. As a result, NR cannot formally distinguish QHDs from HDs and fail to capture the relevant contrasts. On the other hand, CNR avoids these unwarranted predictions for (1b) and (2b) since there is no constituent in these sentences that is contextually equivalent to one its subconstituents. Thus, CNR penalizes redundant disjuncts but, as Katzir & Singh (2014: p. 206) put it, 'it does not penalize undue complexity in some global sense'.

(1b) John studied in Paris or somewhere else in France. ✗NR, ✓CNR

a. Simplifications = {John studied in Paris, John studied somewhere else in France, John studied somewhere in France, John studied in France}
b. Subconstituents = {John studied in Paris, John studied somewhere else in France}
c. Equivalence: (1b) $\Leftrightarrow_c$ John studied in France

Despite its immediate success, CNR fails to account for the felicity of QHDs in full generality. Consider now the clausal variants of (1b):

(4) **Clausal variants of QHDs**

a. John studied in Paris, or (else) he studied in France but not in Paris.
b. John studied in France but not in Paris, or (else) he studied in Paris.

Just like (1b), the QHDs in (4) are contextually equivalent to the simpler clause *John studied in France*. Crucially, in these variants, this clause is a subconstituent of the base sentences: it corresponds to the first clause of the embedded conjunction. These variants are thus predicted by CNR to be inappropriate, contrary to facts.

In sum, NR correctly predicts HDs to be infelicitous but this prediction incorrectly carries out to QHDs, overgenerating infelicity for QHDs and, consequently, leaving the contrasts in (1) and (2) unaccounted for. In this regard, CNR improves upon NR in capturing both contrasts: using a more restrictive notion of alternatives, CNR can still predict the infelicity of (1a) and (2a) while taking (1b) and (2b) out of its scope of application. Yet CNR does not account for the felicity of QHDs in full generality and encounters similar overgeneration issues as NR in predicting other QHD cases like (4) to be infelicitous.

### 2.4 Non-Triviality

The fourth and last approach is based on the notion of triviality (Stalnaker 1974, 1978, van der Sandt 1992, Singh 2008a, Schlenker 2009, Mayr & Romoli 2016). The idea behind this approach is that a sentence is deemed infelicitous if some part $\pi$ of it provides only trivially true or trivially false information in $\pi$'s local context, (14).

(14) **Non-Triviality** (NT)
A sentence $S$ cannot be used in a context $c$ if part $\pi$ of $S$ is entailed or contradicted by the local context of $\pi$ in $c$.

NT needs to be supplied with a theory of local contexts. As it has been observed in the literature, in order to fully capture the infelicity of HDs, one must adopt a symmetric account of local contexts in disjunctions along the lines of (15) (see Schlenker 2009 among others). The reason is simply that HDs are deviant regardless of the linear position of the disjuncts in the disjunction (see examples in (3)), a symmetry that cannot be captured by an asymmetric account.

(15) **Local contexts for disjunction: symmetric account**
a. The local context of $p$ when $p \vee q$ is uttered in context $c$ is $c \cap [\![\neg q]\!]$.
b. The local context of $q$ when $p \vee q$ is uttered in context $c$ is $c \cap [\![\neg p]\!]$.

This approach accounts for the infelicity of simple instances of HDs like (1a). Following (15), the local context for the first disjunct is one which entails the negation of the second disjunct. As a result, the first disjunct of (1a) is trivially false in its local context, and so (1a) is predicted to be infelicitous by NT. Generalizing a bit, any sentence containing a disjunction of the form $\ulcorner p^+$ or $p\urcorner$ or $\ulcorner p$ or $p^+\urcorner$, where $p^+$ contextually entails $p$, is predicted to be infelicitous by NT since $p$ is entailed by $p^+$ and, at the same time, contradicted in $p^+$'s local context, which entails $\neg p$.

(1a) #John studied in Paris or in France. ✓NT

a. Local context for the 1st disjunct:
$c' = c \cap [\![\neg[\text{John studied in France}]]\!]$

b. Triviality check:
$c' \cap [\![\text{John studied in Paris}]\!] = \varnothing$

This approach also accounts for the contrast between (1a) and (1b). In (1b), the local context for the first disjunct is one in which *John studied somewhere else in France* is false, i.e., one in which either John studied in Paris or he didn't study in France. Therefore, the first disjunct is neither trivially false, nor trivially true in its local context. Similarly, the local context for the second disjunct is one in which *John studied in Paris* is false. Thus, the second disjunct is also neither trivially false, nor trivially true in its local context.

(1b) John studied in Paris or somewhere else in France. ✓NT

a. Local context for the 1st disjunct:
$c' = c \cap [\![\neg[\text{John studied somewhere else in France}]]\!]$
Triviality check:
$c' \cap [\![\text{John studied in Paris}]\!] \neq \varnothing$

b. Local context for the 2nd disjunct:
$c' = c \cap [\![\neg[\text{John studied in Paris}]]\!]$
Triviality check:
$c' \cap [\![\text{John studied somewhere else in France}]\!] \neq \varnothing$

Finally, this approach correctly predicts the contrast between HDs and QHDs in (1) to reproduce in DE-environments. Specifically, in sentences like (2a) or (2b), NR has to be checked at embedded levels. In (2a), the disjunctive clause embedded in the restrictor of *every* violates NT because the first disjunct is trivially false in its local context, as in (1a). By contrast, in (2b), neither embedded disjunct is trivially false (or true) in its local context, as in (1b).

We observe however that, on common assumptions about local contexts in conjunctions, NT incorrectly predicts the clausal variants of QHDs in (4) to be infelicitous. To explain this prediction, consider first the standard account of local contexts in conjunctions stated in (16).

(16) **Local contexts for conjunction**

a. The local context of $p$ when $p \wedge q$ is uttered in context $c$ is $c$.
b. The local context of $q$ when $p \wedge q$ is uttered in context $c$ is $c \cap [\![p]\!]$.

The combination of (15) and (16) permits us to determine the local context of the second embedded conjunct in (4a) and (4b). Specifically, the local context of *John did not study in Paris* in these sentences is one in which *John studied in France* is true (by (16)) while *John studied in Paris* is false (by (15)), as exemplified below for (4a). Therefore, *John did not study in Paris* is trivially true in its local context and, consequently, (4a) and (4b) are both predicted to be infelicitous by NT.

(4a) John studied in Paris, or (else) he studied in France but not in Paris. ✗NT

a. Local context for the 2nd disjunct:
$c' = c \cap [\![\neg[\text{John studied in Paris}]]\!]$
b. Local context for the 2nd embedded conjunct:
$c'' = c' \cap [\![\text{John studied in France}]\!]$
c. Triviality check:
$c'' \cap [\![\neg[\text{John studied in Paris}]]\!] = \varnothing$

In sum, NT predicts a sentence to be deviant if that sentence is trivially false or trivially true in its local context. On a symmetric account of local contexts in disjunctions, this theory captures the contrasts between HDs and QHDs in both (1) and (2). However, it encounters similar overgeneration issues as NR and CNR in predicting the clausal variants of QHDs to be infelicitous.

## 3 Existing solutions and the LDHD challenge

We have reviewed four prominent explanatory approaches to HC and shown that none of them accounts for the contrasts between HDs and QHDs in full generality. In the following, we discuss in turn two proposals to restrict the scope of application of the two most promising approaches so far, Non-Redundancy and Non-Triviality. While both proposals are found to solve the overgeneration issues we identified above, it is shown that they give rise to novel undergeneration issues: once these proposals are adopted, the resulting theories can no longer account for the infelicity of Long-distance Hurford Disjunctions (LDHDs).

### 3.1 Moving to the molecular level

Partly in response to the QHD challenge, Katzir & Singh (2014) (see fn.1), building on Chierchia 2009, argue that non-redundancy is checked at an intermediate level of the structure-building process, namely the 'molecular' level of binary operators, where grammar is hypothesized to interface with the context. Katzir & Singh's (2014) non-redundancy condition is stated in (17) (where $O$ is a binary operator taking arguments $\alpha$ and $\beta$, and $c$ is the global context).[12]

(17) **Molecular Non-Redundancy** (MNR, Katzir & Singh 2014: (27))
A sentence $S$ is deviant if $S$ contains a node $\gamma$ such that
$[\![\gamma]\!] = [\![O(\alpha,\beta)]\!]$ and $[\![O(\alpha,\beta)]\!] \equiv_c [\![\zeta]\!]$, where $\zeta \in \{\alpha,\beta\}$.

In short, MNR requires that the meaning of a binary operator applied to its arguments be contextually distinct from the meaning of either of its arguments taken independently. This amendment preserves the good predictions of CNR for the basic contrasts in (1) and (2); crucially, it improves upon CNR in capturing further the felicity of clausal QHDs, as illustrated below for (4a).

(4a) $[_{\gamma_1}[_{\alpha}$ John studied in Paris], or (else)
$[_{\gamma_2}$ $[_{\beta}$ he studied in France] but $[_{\delta}$ he did not study in Paris]]] ✓MNR
a. For $[\![\gamma_1]\!] = [\![OR(\alpha,\gamma_2)]\!]$: for all $\zeta \in \{\alpha, \gamma 2\}$, $[\![O(\alpha,\gamma_2)]\!] \not\equiv_c [\![\zeta]\!]$
b. For $[\![\gamma_2]\!] = [\![AND(\beta,\delta)]\!]$: for all $\zeta \in \{\beta,\delta\}$, $[\![O(\beta,\delta]\!] \not\equiv_c [\![\zeta]\!]$

The problem is that MNR fails to predict the infelicity of LDHDs, as illustrated below for (5a).[13] The reason is that, in contrasts to HDs, the offending Hurford disjuncts in LDHDs are not arguments of the same disjunction operator and therefore, at the levels at which MNR operates, the redundancy goes unnoticed.

12 Katzir & Singh (2014) argue that MNR needs to make reference to the global context in the case of disjunctions, but to local contexts in some other cases that are not relevant here.
13 See Mayr & Romoli 2016 for a discussion of further problems encountered by this approach beyond cases involving disjunction.

(5a) #[$_{\gamma_1}$[$_\alpha$ John studied in France], or (else)
[$_{\gamma_2}$ [$_\beta$ he studied in London] or [$_\delta$ he studied in Paris]]] ✗MNR

a. For $[\![\gamma_1]\!] = [\![OR(\alpha, \gamma_2)]\!]$: for all $\zeta \in \{\alpha, \gamma 2\}$, $[\![O(\alpha, \gamma_2)]\!] \not\equiv_c [\![\zeta]\!]$
b. For $[\![\gamma_2]\!] = [\![OR(\beta, \delta)]\!]$: for all $\zeta \in \{\beta, \delta\}$, $[\![O(\beta, \delta)]\!] \not\equiv_c [\![\zeta]\!]$

In sum, the molecular view correctly predicts phrasal and clausal instances of QHDs to be felicitous, but these predictions incorrectly extend to LDHDs. Thus, this refinement of the Non-Redundancy approach does not provide, as it stands, a satisfying account of the variety of HDs discussed in this paper.[14]

---

14 An anonymous reviewer suggested an interesting refinement of MNR, based on the assumption that connectives take sets of propositions as arguments and that their truth-conditions generalize accordingly, e.g., a disjunction of the form $\mathrm{O}r(D)$, where $D$ is any number of arguments, is true iff at least one member $d$ of $D$ is true (McCawley 1972, Gazdar 1979, Katzir & Singh 2012, among others).

(i) **Molecular Non-Redundancy with Generalized Connectives**
A sentence $S$ is deviant if $S$ contains a node $\gamma$ such that $[\![\gamma]\!] = [\![O(D)]\!]$ and $[\![O(D)]\!] \equiv_c [\![O(D')]\!]$, where $D'$ is a proper subset of $D$, possibly a singleton.

This reformulation would capture LDHDs like (5a), by treating the two overt disjunctions as a single generalized disjunction, namely $\mathrm{O}r(\{\alpha, \beta, \delta\})$, which would be then contextually equivalent to $\mathrm{O}r(\{\alpha, \beta\})$. As far as we can see, it also predicts similar sentences containing different connectives to be felicitous. This prediction, however, seems incorrect. First, one would expect the addition of a negation taking scope over the second disjunction, as shown in (ii), to disrupt an analysis in terms of a single disjunctive operator. Yet the resulting sentence remains infelicitous. Second, and maybe most clearly, we can create equivalent cases by combining disjunction and negation, or negation and conjunction. Consider for instance a game context in which contestants have to deduce where Mr. X could be. For that purpose, they are provided with clues allowing them to eliminate certain locations. In this context, an utterance of (ii) or (iii) sounds odd, as not predicted by (i).

(ii) #Either Mr. X is not in France, or he is not in London or Paris.

(iii) #Either Mr. X is not in France, or he is not in London and he is not in Paris.

Arguably, one may wonder here whether such sentences are not odd sounding simply because of their complexity. We note, however, that equally complex sentences like (iv) sound quite natural in the same context, suggesting that complexity cannot be the sole factor.

(iv) Either Mr. X is not in France, or he is not in London or Lisbon.

### 3.2 Adding exhaustification

Consider again the clausal QHD in (4a), repeated below. This example looks very similar to the one in (18) discussed in Mayr & Romoli 2016, the felicity of which is also challenging for redundancy-based and triviality-based accounts of informational oddness. In particular, as Mayr & Romoli discuss, (18) is predicted to be odd on these accounts because of the redundancy/triviality of the clause 'he didn't (study in France)' embedded in the second disjunct.

(4a) John studied in Paris, or (else) he studied in France but not in Paris.

(18) John studied in France, or (else) he didn't but he had a French supervisor.

In this subsection, we show that Mayr & Romoli's (2016) solution to the case in (18) extends to the one in (4a) and therefore offers an account for the felicity of clausal QHDs. As we explain, however, their account similarly extends to LDHDs like (19), now incorrectly predicting these examples to be felicitous.

(19) #John studied in France, or (else) he studied in London or in Paris.

To illustrate these points in turn, let us first consider Mayr & Romoli's (2016) solution. In a nutshell, Mayr & Romoli observe that the exhaustified meaning of (18), in contrast to its literal meaning, does not suffer from redundancy or triviality and, thus, is not predicted to be odd. Based on this observation, they propose that sentences like (18) are rescued from oddness due to extra work of exhaustification, and move on to show how this solution can be integrated with either NR or NT. Starting with the former, Mayr & Romoli show that the clause 'he didn't (study in France)' in (18) becomes non-redundant when the alternative to (18) in (20) is also exhaustified, as the exhaustification of (18) is not equivalent to that of (20), as illustrated in (21). In particular, note that (20) has the non-trivial implicature that *it's not true that John studied in France and had a French supervisor* while (18) only has a vacuous implicature, corresponding here to the negation of a contradictory alternative. In other words, (18) manages to avoid redundancy because (18) and its simpler alternatives like (20) are all interpreted in the scope of an exhaustification operator and, in such cases, exhaustification breaks contextual equivalence.[15]

15 Note that Mayr & Romoli (2016), following Meyer 2013, assume that EXH cannot be deleted when considering simplifications.

(20) John studied in France, or he had a French supervisor.

(21) a. EXH[(18)]$\Leftrightarrow$(John studied in France, or he didn't but he had a French supervisor)$\wedge\neg$(John studied in France, AND he didn't but he had a French supervisor)
$\Leftrightarrow$(John studied in France, or he didn't but he had a French supervisor)

b. EXH[(20)]$\Leftrightarrow$(John studied in France or he had a French supervisor) $\wedge\neg$(John studied in France AND he had a French supervisor)

Turning now to the NT approach, recall that (18) was predicted to be odd on its literal meaning because the clause 'he didn't (study in France)' is trivially true in its local context. The situation changes however if the meaning of (18) is exhaustified. On an approach to local contexts à la Schlenker 2009, the local context of 'he didn't (study in France)' in the exhaustified version of (18) above becomes simply the global context and, relative to the global context, this clause is neither trivially true, nor trivially false.[16] As a result, when (18) is interpreted with exhaustification, no triviality arises and this sentence is thus predicted to be felicitous, as expected.

This line of explanation readily extends on both approaches to clausal QHDs like (4a), which are also predicted to be felicitous when exhaustification is taken into account. On the NR approach, it is so because, just as before, the exhaustified version of (4a) in (22a) is not equivalent to its exhaustified simplification in (22b). In particular, the exhaustified meaning of (4a) is equivalent to its plain meaning, while (22b) has a non-trivial implicature which, together with the truth of EXH's prejacent, conveys that John studied in France but not in Paris. Similarly, in the exhaustified version of (4a) in (22a), the local context of the last conjunct does not entail that John didn't study in Paris. Hence, this conjunct is non-trivial and the whole sentence is predicted to be felicitous on the NT approach.

16 We refer to Mayr & Romoli 2016 for the details. In a nutshell, the key observation here is that, when a disjunctive sentence is *not* exhaustified, we can ignore the worlds in which the first disjunct is true when evaluating the second disjunct for the whole disjunction is true anyway in these worlds. On the other hand, when a disjunctive sentence *is* exhautisfied, these worlds can no longer be ignored as we now need to verify that the disjuncts aren't both true in these worlds. As Mayr & Romoli (2016) emphasize, exhaustification affects the calculation of local contexts even if the result of exhaustification is itself vacuous, as it is the case in (21a) for instance.

(22) a. EXH[(4a)]⇔(John studied in Paris, or he studied in France but not in Paris) ∧¬(John studied in Paris, AND he studied in France but not in Paris)
⇔(John studied in Paris, or he studied in France but not in Paris)

b. EXH[John studied in Paris or in France]
⇔(John studied in Paris or in France)∧¬(John studied in Paris AND in France)
⇔(John studied in France but not in Paris)

The problem with this proposal is that, when we turn to LDHDs like (19), it predicts that we should be able to apply the very same strategy to rescue this variety of HDs from oddness, contrary to facts.[17] On the NR approach, this prediction follows because, in the same way as above, the exhaustification of (19) in (23a) is not equivalent to its exhaustified simplification in (23b): the former conveys that *John didn't study both in Paris and in London*, while the latter conveys the stronger implicature that *John didn't study both in France and in London*. Thus, the sentence is not predicted to be infelicitous by NR. Similarly, on the NT approach, in the exhaustified version of (19), the local context of the last conjunct does not entail the negation of the first disjunct. Thus, the sentence is not predicted to be infelicitous by NT either.

(23) a. EXH[(19)]⇔(John studied in France, or he studied in London or in Paris)∧¬(John studied in France, AND he studied in London AND in Paris)
⇔ (John studied in France or he studied in London) ∧¬(John studied in London AND in Paris)

b. EXH[John studied in France or he studied in London]
⇔(John studied in France or he studied in London)∧¬(John studied in France AND he studied in London)

In sum, Mayr & Romoli's (2016) proposal, originally devised to account for the felicity of sentence like (18), offers a solution to the ovegeneration issue raised by clausal QHDs for the NR and the NT approaches. The problem, as we showed, is that adopting this solution also leads to novel undergeneration

17 This is not the only issue for this proposal. As Mayr & Romoli (2016) note, it only offers a partial account of HDs to begin with. The reason is that, to handle some of their critical cases, Mayr & Romoli need to assume that the disjuncts in a disjunction are asymmetric. Therefore, on their proposal, a HD like *#John studied in Paris or in France* is not predicted to be odd in the first place.

issues for these two approaches: the resulting theories no longer distinguish LDHDs from QHDs and incorrectly predict the former to be felicitous as well.

## 4 Conclusion

Fifty years after Hurford's original observation, the challenge of explaining the oddness of disjunctions with entailing disjuncts remains. As we showed, none of the explanatory approaches we are aware of can successfully account for HDs and their varieties, and it is unclear whether, and if so how, the principles underlying these approaches can be amended to capture the infelicity of HDs and LDHDs while leaving QHDs out of their scope of application. In particular, we have shown that recent proposals suggesting to modify the level at which these principles would apply, or arguing for exhaustification as a rescue strategy, do not offer a satisfying solution to the main challenges we identified: the resulting theories provide a general account for QHDs but lose the account of LDHDs.

More generally, our data challenge the classical description of HDs which the formulation of HC is based upon. Specifically, LDHDs are not captured by HC for neither of the disjuncts in the matrix disjunction entails the other, and similarly in the local disjunction. On the face of it, it is tempting to try and give a more general version of HC of the sort in (24) by requiring that, in such disjunctive constructions, none of the disjuncts entails any other disjunct at any level of the sentence.

(24) **Generalized Hurford's Constraint**
Let $S$ be a sentence formed by hierarchically organized disjuncts and let $D = \{d_1, d_2, \dots, d_n\}$ be the set of independent disjuncts occurring in $S$. $S$ is odd in a context $c$ if, for any $d, d' \in D$, $d \Rightarrow_c d'$ or $d' \Rightarrow_c d$.

This generalized version of HC would now capture LDHDs. Yet we surmise that this description may not be general enough. Mandelkern & Romoli (2018) show for instance that similar infelicity effects reproduce with conditionals, as illustrated in (25), and we note here that such effects reproduce in hybrid cases like (26) where the second disjunct involves a (non-Hurfordian) conditional in place of a disjunction.[18]

18 One could argue that conditionals are underlyingly analyzed as disjunctions, and that (24) is checked at this level of representation. We refer the reader to Mandelkern & Romoli 2018 for a critical discussion of this idea and a presentation of the challenges it encounters.

(25) **Hurford Conditional**
#If John is not in Paris, he is in France.

(26) **Long-Distance Hurford Hybrid**
#John is in France or, if he is not in London, he is in Paris.

To conclude, the varieties of HDs discussed in this paper are challenging for current explanatory approaches and it is an open question how to formulate the right descriptive generalization that would subsume all of these cases under one roof. It is important to emphasize that the novel cases we introduced only call for a *conservative extension* of HC, that is, for a more general description preserving the basic HD cases that HC was originally intended to cover. Hence, as far as we can see, the broad lessons previously drawn from Hurford's original description and the classical Hurford effects are left untouched. In particular, HDs remain a powerful argument for the existence of embedded implicatures (Chierchia, Fox & Spector 2012 among others; but see also Bergen, Levy & Goodman 2016). Regardless of how HC ends up being extended, the felicity of a sentence like (27) is still accounted for only if one assumes that a scalar implicature is computed within the first disjunct.

(27) John met some or all of the students.

Similarly, the observation from Ciardelli & Roelofsen (2017) that Hurford effects reproduce in questions, as illustrated in (28), was used as an argument for an Inquisitive Semantics approach, which can provide a unified account of the declarative and interrogative HD cases. Ciardelli & Roelofsen's argument also remains untouched by the need to extend HC as the novel generalization would still need to capture the simple interrogative cases as well.

(28) **HD-Question**
#Did John study in Paris or in France?

In fact, one could take our cases to strengthen their argument for a unified approach as the paradigm we discussed reproduces perfectly in questions:

(29) **QHD-Question**
Did John study in Paris, or somewhere else in France?

(30) **Clausal variant of QHD-Question**
Did John study in Paris, or somewhere in France but not in Paris?

(31) **Long-distance variant of HD-Question**
#Did John study in France, or in London or in Paris?

In sum, Hurford effects are powerful diagnostics which have been fruitfully used in the past literature to inform theories of implicatures and alternatives. We believe that we could learn even more from them if we refine our understanding of their distribution and find a satisfying explanation for their *raison d'être*, an enterprise to which we hope we have contributed somewhat with this paper.

## References


Anvari, Amir. 2018a. Logical integrity: From Maximize Presupposition! to Mismatching Implicatures. Paris. Unpublished manuscript Institut Jean-Nicod. https://ling.auf.net/lingbuzz/003866.

Anvari, Amir. 2018b. Logical integrity. *Semantics and Linguistic Theory (SALT)* 28. 711–726. https://doi.org/10.3765/salt.v28i0.4419.

Bergen, Leon, Roger Levy & Noah Goodman. 2016. Pragmatic reasoning through semantic inference. *Semantics and Pragmatics* 9(20). https://doi.org/10.3765/sp.9.20.

Chemla, Emmanuel. 2008. Similarity: Towards a unified account of scalar implicatures, free choice permission and presupposition projection. Unpublished manuscript Ecole Normale Supérieure and Massachusetts Institute of Technology. https://semanticsarchive.net/Archive/WI1ZTU3N/Chemla-SIandPres.html.

Chierchia, Gennaro. 2009. On the explanatory power of dynamic semantics. Handout from talk at Sinn und Bedeutung 14.

Chierchia, Gennaro. 2013. *Logic in grammar: Polarity, free choice, and intervention*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199697977.001.0001.

Chierchia, Gennaro, Danny Fox & Benjamin Spector. 2012. The grammatical view of scalar implicatures and the relationship between semantics and pragmatics. In Claudia Maienborn, Klaus von Heusinger & Paul Portner (eds.), *Semantics: An international handbook of natural language meaning volume 3*. Berlin: Mouton de Gruyter. https://doi.org/10.1515/9783110253382.2297.

Ciardelli, Ivano & Floris Roelofsen. 2017. Hurford's constraint, the semantics of disjunction, and the nature of alternatives. *Natural Language Semantics* 25. 199–222. https://doi.org/10.1007/s11050-017-9134-y.

Fox, Danny. 2007. Free choice and the theory of scalar implicatures. In Uli Sauerland & Penka Stateva (eds.), *Presupposition and Implicature in Compositional Semantics*, 71–120. London: Palgrave Macmillan. https://doi.org/10.1057/9780230210752_4.

Fox, Danny. 2008. Two short notes on Schlenker's theory of presupposition projection. *Theoretical Linguistics* 34(3). 237–252. https://doi.org/10.1515/THLI.2008.016.

Fox, Danny. 2016. On why ignorance might not be part of literal meaning. Commentary on Marie-Christine Meyer at the Massachusetts Institute of Technology workshop on exhaustivity.

Fox, Danny & Roni Katzir. 2011. On the characterization of alternatives. *Natural Language Semantics* 19(1). 87–107. https://doi.org/10.1007/s11050-010-9065-3.

Gajewski, Jon. 2002. L-analycity in natural language. Unpublished manuscript, Massachusetts Institute of Technology.

Gazdar, Gerald. 1979. *Pragmatics: Implicature, Presupposition, and Logical Form*. New York: Academic Press.

Grice, Paul. 1975. Logic and conversation. In Peter Cole & Jerry Morgan (eds.), *Syntax and semantics 3: Speech acts*, 41–58. Leiden, The Netherlands: Brill. https://doi.org/10.1163/9789004368811_003.

Heim, Irene. 1991. Artikel und Definitheit. In Arnim von Stechow & Dieter Wunderlich (eds.), *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, 487–535. Berlin: de Gruyter. https://doi.org/10.1515/9783110126969.7.487.

Hurford, James R. 1974. Exclusive or inclusive disjunction. *Foundations of Language* 11(3). 409–411. http://www.jstor.org/stable/25000785.

Katzir, Roni. 2007. Structurally-defined alternatives. *Linguistic and Philosophy* 30(6). 669–690. https://doi.org/10.1007/s10988-008-9029-y.

Katzir, Roni & Raj Singh. 2008. A note on the absence of xor in natural language. In Giorgio Magri & Paul Egré (eds.), *Presuppositions and implicatures*. Massachusetts Institute of Technology Working Papers in Linguistics (MITWPL). https://carleton.ca/singhr/wp-content/uploads/Katzir-Singh-2009-Min-Max.pdf.

Katzir, Roni & Raj Singh. 2012. Two restrictions on possible connectives. *University of California, Los Angeles Working Papers in Linguistics* 17. 154–

162. https://semanticsarchive.net/Archive/zgxODhlZ/keenan%20festschrift.pdf#page=162.

Katzir, Roni & Raj Singh. 2014. Hurford disjunctions: Embedded exhaustification and structural economy. In *Proceedings of Sinn und Bedeutung 19*, vol. 18, 201–216. https://ojs.ub.uni-konstanz.de/sub/index.php/sub/article/view/313.

Magri, Giorgio. 2009a. *A theory of individual-level predicates based on blind mandatory implicatures: constraint promotion for optimality theory*. Massachusetts Institute of Technology dissertation.

Magri, Giorgio. 2009b. A theory of individual-level predicates based on blind mandatory scalar implicatures. *Natural language semantics* 17. 245–297.

Magri, Giorgio. 2010. Another argument for embedded scalar implicatures based on oddness in DE environments. *Semantics and Linguistic Theory (SALT)* 20. https://doi.org/10.3765/salt.v20i0.2547.

Mandelkern, Matthew & Jacopo Romoli. 2018. Hurford conditionals. *Journal of Semantics* 35(2). https://doi.org/10.1093/jos/ffx022.

Marty, Paul & Jacopo Romoli. 2021a. Presupposed free choice and the theory of scalar implicatures. *Linguistics and Philosophy*. 1–62. https://doi.org/10.1007/s10988-020-09316-5.

Marty, Paul & Jacopo Romoli. 2021b. Presuppositions, implicatures, and contextual equivalence. *Natural Language Semantics* 29(2). 229–280. https://doi.org/10.1007/s11050-021-09176-0.

Mayr, Clemens & Jacopo Romoli. 2016. A puzzle for theories of redundancy: Exhaustification, incrementality, and the notion of local context. *Semantics and Pragmatics* 9(7). https://doi.org/10.3765/sp.9.7.

McCawley, James D. 1972. A program for logic. In D. Davidson & G. Harman (eds.), *Semantics of Natural Language*, 498–544. Reidel, Dordrecht. https://doi.org/10.1007/978-94-010-2557-7_18.

Meyer, Marie-Christine. 2013. *Ignorance and grammar*. Massachusetts Institute of Technology dissertation. https://doi.org/1721.1/84420.

Meyer, Marie-Christine. 2014. Deriving hurford's constraint. *Semantics and Linguistic Theory* 24. 577–596. https://doi.org/10.3765/salt.v24i0.2518.

Sauerland, Uli. 2004. Scalar implicatures in complex sentences. *Linguistics and Philosophy* 27. 367–391. https://doi.org/10.1023/B:LING.0000023378.71748.db.

Schlenker, Philippe. 2009. Local contexts. *Semantics and Pragmatics* 2(3). 1–78. https://doi.org/10.3765/sp.2.3.

Simons, Mandy. 2001. On the conversational basis of some presuppositions. *Semantics and Linguistic Theory (SALT)* 11. 431–448. https://doi.org/10.3765/salt.v11i0.3099.

Singh, Raj. 2008a. *Modularity and locality in interpretation*. Massachusetts Institute of Technology dissertation. https://doi.org/1721.1/45895.

Singh, Raj. 2008b. On the interpreation of disjunction: Asymmetric, incremental and eager for inconsistency. *Linguistics and Philosophy* 31. 245–260. https://doi.org/10.1007/s10988-008-9038-x.

Singh, Raj. 2010. Oddness and ignorance inferences. Handout presented at Modularity Reading Group at Massachusetts Institute of Technology. https://carleton.ca/singhr/wp-content/uploads/singh-oddness-ignorance-handout.pdf.

Stalnaker, Robert. 1974. Pragmatic presuppositions. In M. Munitz & D. Unger (eds.), *Semantics and philosophy*, 197–213. New York University Press.

Stalnaker, Robert. 1978. Assertion. In Peter Cole (ed.), *Pragmatics* (Syntax and Semantics 9), 315–332. https://doi.org/10.1163/9789004368873_013.

van der Sandt, Rob. 1992. Presupposition projection as anaphora resolution. *Journal of Semantics* 9. 333–377. https://doi.org/10.1093/jos/9.4.333.

Westera, Mathijs. 2019. Hurford disjunctions: An in-depth comparison of the grammatical and the pragmatic approach. Unpublished Ms. Leiden University. https://semanticsarchive.net/Archive/jk5YzYyO/.

Paul Marty
Institute of Linguistics and Language Technology (iLLT)
University of Malta
Msida MSD2080, Malta
paul.marty@um.edu.mt

Jacopo Romoli
Institut für Linguistik Gebäude
Heinrich Heine University
40225 Düsseldorf, Germany
jacopo.romoli@hhu.de