Overview It's been noted that in certain languages, disjunctions exhibit PPI behavior (cf. Szabolcsi (2002)): (i) anti-licensing – they cannot be interpreted in the scope of a clausemate negation (only a wide scope interpretation is available) (1a), (ii) rescuing – they are acceptable in the scope of an even number of negative operators (1b), and (iii) locality of anti-licensing – they are acceptable in the scope of an extra-clausal negation (1c). I demonstrate this with French *ou* (Spector, 2014).

(1) a. Marie n'a pas invité Léa ou Jean à dîner.
Marie has not invited Lea or Jean for dinner
(i) Mary didn't invite Lucy or she didn't invite John for dinner. *or>not*
(ii) *Neither Lucy not John were invited to dinner by Mary. *not>or*
b. Il est peu probable que Paul n'ait pas invité Pierre ou Julie à dîner.
'It is likely that Paul invited either Pierre or Julie for dinner.'
c. Paul ne pense pas que Marie ait invité Pierre ou Julie à dîner.
'Paul doesn't think that Marie invited Pierre or Julie for dinner.'
(i) Paul doesn't think that M invited P or he doesn't think that M invited J.
(ii) Paul doesn't think that M invited P and he doesn't think that M invited J.

In this talk I will argue that what distinguishes PPI disjunctions from non-PPI disjunctions is the fact that PPI-disjunctions obligatory trigger epistemic inferences. The behavior of PPI simple disjunctions (French *ou* "or") mirrors that of complex disjunctions (French *soit soit* "either or"), in that PPI complex disjunctions trigger obligatory scalar inferences (cf. Spector (2014) on *soit soit*), while PPI simple disjunctions trigger obligatory epistemic inferences. I implement this proposal within the grammatical approach to implicatures, as discussed below.

The proposal Following previous work on disjunction (cf. Sauerland (2004), Fox (2007), Chierchia (2013), a.m.o.), I claim that disjunction activates sub-domain alternatives as well as scalar alternatives, (2). Borrowing from the grammatical theory of implicatures (Chierchia et al., 2012), I take implicatures to be the result of a syntactic ambiguity resolution in favor of an LF which contains a covert exhaustivity operator $\mathcal{E}xh$, (3).

(2) a. $\mathscr{A}lt_D(p \vee q) = \{p, q\}$
b. $\mathscr{A}lt_S(p \vee q) = \{p \wedge q\}$

(3) $\mathcal{E}xh(p) = p \wedge \forall q \in \textbf{IE}(p, \mathscr{A}lt(p))[p \not\subseteq q \rightarrow \neg q]$
where: $\textbf{IE}(p, \mathscr{A}lt(p)) = \lambda q.\neg\exists r \in \mathscr{A}lt(p)$ s.t. $(p \wedge \neg r) \rightarrow q$.

Observe that the exhaustifier in (3) is contradiction-free by virtue of the fact that it only negates alternatives which are innocently excludable (IE), namely whose negation will not lead to a contradiction (Fox, 2007). I am furthermore claiming that domain and scalar alternatives can be acted on by the exhaustifier independently of each other. One possible way to implement this is via different exhaustifiers, one that looks only at domain alternatives, $\mathscr{E}xh_D$, and another one which looks only at scalar alternatives, $\mathscr{E}xh_S$. I moreover assume, following Meyer, that ignorance implicatures are derived in the grammar. Her claim is that assertively used sentences contain a covert doxastic operator which is adjoined at the matrix level at LF (cf. Chierchia (2006); Alonso-Ovalle and Menéndez-Benito (2010)), which I represent as a necessity modal below. What this means then is that exhaustification proceeds with respect to the alternatives in (4a), delivering the enriched meaning in (4b):

(4) a. $\mathscr{A}lt_D(\Box(p \vee q)) = \{\Box p, \Box q\}$
b. $\mathscr{E}xh_D[\Box(p \vee q)] = \Box(p \vee q) \wedge \neg\Box p \wedge \neg\Box q$

This doxastic operator delivers the epistemic inference that amounts to "The speaker doesn't know which of the disjuncts is true." Note that in the scope of negation (generalizable to any downward-monotone operator), this inference disappears since the exhaustification is vacuous due to the fact that the alternatives are entailed by the assertion.

(5) $\mathcal{E}xh_D[\Box\neg[p \vee q]]$ $\Box\neg[p \vee q] = \Box\neg p \wedge \Box\neg q$
a. $\mathcal{A}lt_D(\Box\neg[p \vee q]) = \{\Box\neg p, \Box\neg q\}$ $[\Box\neg p \wedge \Box\neg q] \rightarrow \Box\neg p / \Box\neg q$
b. $\mathcal{E}xh_D[\Box\neg[p \vee q]] = \Box\neg[p \vee q]$

I claim that this vacuous result is what makes certain disjunctions take on a PPI behavior. In particular, I argue that French *ou*, unlike English *or*, triggers obligatory exhaustification of its domain alternatives. Coupled with an economy condition on exhaustification which requires its insertion to give rise to a strengthened meaning, we are now in the right position to derive the unacceptability of PPI-disjunction in the scope of negation. In UE contexts the exhaustification of disjunction gives rise to an epistemic inference, (4b). In DE contexts the exhaustification is vacuous, i.e. the application of the obligatory exhaustifier doesn't result in strengthening, hence the unavailability of a narrow scope interpretation for PPI-disjunctions.

What about non-PPI disjunctions? I argue that these elements simply don't invoke obligatory exhaustification. We know independently that certain implicatures are cancelable, e.g. the implicature *not all* that results from the application of the exhaustifier to a proposition containing the scalar element *some*. The continuation in (6) could only be felicitous if the implicature *not all* was not generated. It's been argued that in order to account for such cases we can simply invoke the notion of optional exhaustification. In other words, both LF, with and without $\mathcal{E}xh$ are available, but context makes one more salient.

(6) Mary talked with some of the boys. In fact she talked with all of them.

This optionality means that English *or*, a non-PPI, can take narrow scope with respect to a DE operator since the LF without $\mathcal{E}xh$ is available for it (an option that French *ou* does not have).

PPIs without an epistemic inference Contrary to what we predict, however, there are contexts which allow the use of PPI-disjunction even in the absence of an epistemic inference, (7a).

(7) a. Marie a parlé à Jean ou Paul. En fait, elle a parlé aux deux.
b. Mary talked with John or Paul. In fact, she talked with both.

What gets us into trouble with the continuation ('in fact both' = $\Box p \wedge \Box q$) is precisely what allowed a PPI-disjunction to survive in UE cases, namely the epistemic inference ($\neg\Box p \wedge \neg\Box q$). What the present system allows us to derive is a meaning compatible with a situation in which both disjuncts are true. I argue that invoking recursive exhaustification of the domain alternatives will yield such a meaning.

(8) $\mathscr{E}xh_D[\Box[\mathscr{E}xh_D[p \vee q]]] = \Box(p \vee q) \wedge (\Box p \rightarrow \Diamond q) \wedge (\Box q \rightarrow \Diamond p)$

This recursively enriched meaning is now compatible with a situation in which both *p* and *q* must be true, i.e. $\Box(p \wedge q)$. While at first sight it might seem like an implausible inference, consider the following relatively natural paraphrase: 'My belief that *p* does not rule out the possibility that *q*, and vice versa.'

PPIs under non-local negation How can we account for the fact that the PPI can survive in the scope of an extra-clausal negation? On the one hand we need to argue that the exhaustification is non-vacuous so as to account for the PPI's acceptability. On the other hand we want to derive a meaning that is equivalent to the meaning corresponding to the non-exhaustified LF: $\Box(\neg(p \vee q))$. Furthermore, whatever analysis we provide must not be an option for PPIs under clause-mate negation. Within this system, the only way to achieve both strengthening and a meaning equivalent to the non-exhaustified sentence is by invoking two levels of recursive exhaustification, one in the embedded clause and another in the matrix clause:

(9) $\Box[_{\mathrm{IP}_4}\mathcal{E}xh_D[\mathcal{E}xh_D[_{\mathrm{IP}_3}\neg[_{\mathrm{IP}_2}\mathcal{E}xh_D[\mathcal{E}xh_D[_{\mathrm{IP}_1}p \vee q]]]]]]$

Recursively exhaustifying a disjunction gives rise to a conjunctive meaning.

(10) $[\![\mathrm{IP}_2]\!] = p \wedge q$ and $[\![\mathrm{IP}_2]\!] \rightarrow [\![\mathrm{IP}_1]\!]$

If we take the result of exhaustification to be evaluated incrementally, and in a hierarchical rather than a linear sense (cf. Fox and Spector (2009)), the result of exhaustification will be non-vacuous at IP_2 wrt IP_1. Notice, however, that the result of this recursive exhaustification gives rise to a globally weaker meaning since conjunction under negation is weaker than disjunction under negation. In order to abide by the requirement of non-weakening exhaustification, a second level of recursive exhaustification needs to be employed, delivering the meaning in (11).

(11) $[\![\mathrm{IP}_4]\!] = \neg p \wedge \neg q$

Putting it all together, we see that the final result will be the same as if no exhaustification had occurred. Note that while globally the result of exhaustification was vacuous, it was incrementally strengthening, so no single occurrence of $\mathcal{E}xh$ was weakening. Why is this not an option for PPI-disjunction under a local negation? The fact that we are dealing with an additional CP level below the negation seems to be clue to answering this question. One possible response would be to say that the ban on vacuous exhaustification is always checked with respect to a phase: while in the case of a disjunction under a non-local negation we have two distinct positions at which the result of exhaustification is evaluated, the embedded and the matrix level, in the case of a disjunction under a clause-mate negation there will only be one level, meaning that the result of the lower exhaustification will be weakening.