Polarity sensitivity and diagonalization

Parasitic licensing is the phenomenon where weak Negative Polarity Items (NPIs) can intermediate in the licensing of strong NPIs that would otherwise remain unlicensed (see Klima 1964; den Dikken 2006; Hoeksema 2007). Take the strong NPI *in years* that is only licensed in anti-additive environments like *nobody*, and not in non-anti-additive, (Strawson) downward entailing contexts like *only*, as in (1a,b). Strikingly, inclusion of a weak NPI *any* renders the licensing *in years* by *only* fine again, as in (1)c.

(1) a. Nobody has read the *New York Times* in years.
b. * Only Mary has read the *New York Times* in years.
c. Only Mary has read any newspaper in years.

In the literature, such cases of parasitic licensing have been discussed, though not yet fully understood (see den Dikken 2006; Hoeksema 2007). In this paper, we address the following question: why is it that NPIs like *in years* can be rescued by means of parasitic licensing? Below, we show that this is due to the fact that NPIs like *any* are inherently uncertain, and we demonstrate that a treatment of uncertainty along the lines of Stalnaker (1978, 2004) provides a natural account for the above-discussed facts.

Background: Stalnaker 1978, 2004. According to Stalnaker, the role of an assertion is to reduce a Context Set CS_c, a set of possible worlds compatible with what is mutually believed by the participants of the conversation. For some cases, for example, identity statements like *Hesperus is Phosphorus*, the simple picture above is not enough. For such cases, Stalnaker developes a two-dimensional framework in which possible worlds play a double role: (i) they determine the truth-value of the proposition expressed by the utterance (our standard semantic value) and (ii) they determine the truth-value of what is expressed by the utterance (what is being said). The matrix in figure 1 illustrates the meaning of *Hesperus is Phosphorus* in the two-dimensional framework. The conversational goal of uttering *Hesperus is Phosphorus* is to inform that the actual world is i, but not j. This goal cannot be achieved by updating CS_c with the horizontal (necessary true or false) propositions, but it can be achieved by the *diagonal proposition*, i.e., a proposition ϕ that is true in w for each w iff ϕ expressed in w is true in w, that is to say $\phi := \{w \in W : \phi_w$ is true in $w\}$.

	i:	j:
i:	T	T
j:	F	F

Figure 1:

Weak NPIs: the case of *only* and *any* We propose to extend Stalnaker's conjecture that assertions can be identified as diagonal propositions to presuppositions. In simple cases like *Only John read the NYT*, the presupposition of *only* is satisfied when 'John read NYT' is entailed by the context set. But we propose that presuppositions can also give rise to uncertainty (either due to ignorance or indifference). In such cases, the presupposition is satisfied when the diagonal proposition of the presupposition is entailed by the context set, as in (P):

(P) When a sentence S translatable as ϕ has *an uncertain presupposition* ψ, S is felicitously uttered in context c only if the context set CS_c entails the diagonal proposition of ψ, i.e., $CS_c \subseteq \{w \in W : \psi_w$ is true in $w\}$.

Let us look at *any* under (Strawson) downward entailing elements like *only*. That *any* is an NPI licensed in a (Strawson) downward entailing context, we take to be the result of exhaustification of its domain alternatives, following the standard analysis by Chierchia (2013). In addition, we adopt the standard analysis for *only* (see Horn 1969; von Fintel 1999), which takes *only* to presuppose its prejacent, see (2).

(2) Only John read anything. (1 = john, 2 < = 'everyone but john')
Psp $\exists x \in \{a, b, c\}[read(j, x)]$; abbrev. $a_1 \vee b_1 \vee c_1$
Asr: $\neg\exists y \neq j\ \exists x \in \{a, b, c\}[read(y, x)]$; abbrev. $\neg(a_{2<} \vee b_{2<} \vee c_{2<})$

Since the domain of *any* does not have to be the widest (an assumption supported by the co-occurrence of *any* with exceptives and its acceptability in non-exhaustive contexts), the presupposition of *only* with *any* in its scope is uncertain: it can be different in different possible worlds - say $i,\ j,\ k$.

Now, the presupposition in (2) is different across i, j, k. We take such uncertain presuppositions to be satisfied if their diagonal is entailed by CS_c, as in the matrix in figure 2.

	i: $a_1 \vee b_1 \vee c_1$	j: $a_1 \vee b_1$	k: c_1
i: $a_1 \vee b_1 \vee c_1$	T	T	T
j: $a_1 \vee b_1$	F	T	F
k: c_1	F	F	T

Figure 2: Diagonal presupposition of *only*

Strong NPIs: the case of *only* and *in weeks* As a next step, we assume that strong NPIs like *in weeks* are not special in the sense that they have some particular requirement that restricts them to anti-additive contexts only, but are actually weak NPIs whose presuppositional requirements are such that they are in conflict with the presuppositional requirements of non-anti-additive NPI-licensers such as *only*. This idea can be thought of as an alternative version of Gajewski (2011), who argues that strong NPI-hood does not involve an inherent distributional restriction to anti-additive contexts, but rather argues that strong NPIs are like weak NPIs sensitive to (Strawson) downward entailment only, but require the overall meaning contribution and not only the assertion to be (Strawson) downward entailing. Here, we illustrate our proposal for *only* and *in weeks*. First, we follow the essence of Iatridou and Zeijlstra (2019) in assuming that NPIs like *in weeks* presuppose the presence of a Perfect Time Span (PTS) whose Left Boundary (LB) must be set by the relevant event and that presuppose a change of state, i.e., either before or after PTS' LB no event of the kind may take place, see (3). In addition, we assume that since *in weeks* introduces subdomain alternatives of the PTS that are obligatorily exhaustified (see Chierchia 2013; Iatridou and Zeijlstra 2019), *in weeks* is an NPI.

(3) John hasn't read the *NYT* in weeks. (UT = Utterance Time, $\tau(e)$ = event run time)
Psp: $\exists$ PST [PST=[LB,RB] $\wedge$ RB=UT $\wedge$ LB=UT-n-weeks $\wedge$ ($\exists e$ [john-read-NYT(e) $\wedge \tau(e) \subset$ PTS] $\vee$ $\exists e$ [john-read-NYT(e) $\wedge \tau(e) <$ PTS])]; abbrev. $(n \ll x) \vee (x \ll n)$ (x = any event, n = NYT-reading event, events after $\ll$ happen within the PTS);
Asr: $\neg\exists e$ [john-read-NYT(e) $\wedge \tau(e) \subset$ PTS]; abbrev. $\neg(x \ll n)$

Now, assume that there are three types of reading events: m = John read *Le Monde*, n = John read the *New York Times*, and t = John read *Toronto Star*. Also assume that there are two worlds i, j as in figure 3. We claim that (4) is ungrammatical because it is impossible to construct a context set that entails both the presupposition of *only* and the disjunct of the presupposition of *in weeks* that is compatible with the assertion, as in figure 3.

(4) *Only John has read the *New York Times* in weeks. (N = everyone)
Psp of *only*: $x \ll n_1$; Psp. of *in weeks*: $(x \ll n_N) \vee (n_N \ll x)$; Asr: $\neg(x \ll n_{2<})$

	i: $m < n_1 \ll t$	j: $m \ll n_1 < t$
Psp. of *only*: $x \ll n_1$	F	T
Psp. of *in weeks*: $n_N \ll x$	T	F

Figure 3: Incompatible requirements of *only* and *in weeks*

Parasitic licensing: the case of *any* and *in weeks* Strikingly, the uncertainty of *any* can rescue the co-occurrence of *only* and *in weeks* in non-negative sentences. The reason is that given *any*'s uncertainty, now both presuppositions can be satisfied, albeit not simultaneously. However, as long as the presupposition diagonal is satisfied, all usage conditions are fulfilled.

(5) Only John has read anything in weeks.
Psp of *only*: $x \ll (a_1 \vee b_1 \vee c_1)$; Psp of *in weeks*: $(x \ll (a_N \vee b_N \vee c_N)) \vee ((a_N \vee b_N \vee c_N) \ll x)$
Asr: $\neg(x \ll (a_{2<} \vee b_{2<} \vee c_{2<}))$

	i: $x \ll (a_1 \vee b_1), c_N \ll x$	j: $x \ll c_1, (a_N \vee b_N) \ll x$
Psp. of *only*: $x \ll c_1$	F	T
Psp. of *in weeks*: $(a_N \vee b_N) \ll x$	F	T

Figure 4: Parasitic licensing

As we can see in figure 4, for any two disjoint interpretations of the presupposition of *only* and the presupposition of *in weeks* we can have a world that satisfies both. This means that (5) is grammatical even though *in weeks* is not in an anti-additive but only in a (Strawson) DE environment. This explains the phenomenon of parasitic licensing.