THE POLARITY OF ADDITIVE PARTICLES

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The data Many languages have additive focus-sensitive markers that come in a positive/negative pair. Consider here the case of Romanian. *şi* is the default additive; it can occur in UE as well as most DE contexts, where it's equivalent to *too*, (1). When *şi* co-occurs with negation, it must have a positive antecedent, (2); even then, using *şi* is highly marked, indicated by #. In contrast, the negative additive *nici*, translatable as *either*, obligatorily co-occurs with negation and requires a negative antecedent, (3), similarly to other NPIs in the language.

(1) Maria bea vin. Bea şi bere.
Maria drinks wine. drinks ADD beer
'Mary drinks wine. She drinks beer too.'

(2) #Maria (*nu) bea vin. Nu bea şi bere.
Maria not drinks wine. not drinks ADD beer
'Mary drinks wine. She doesn't drink beer (too).'

(3) Ion *(nu) bea vin. *(Nu) bea nici bere.
John not drinks wine. Not drinks N-ADD beer.
'John doesn't drink wine. He doesn't drink beer either.'

We see a very similar pattern in Italian (*anche* vs. *neanche*), Serbian (*i* vs. *ni*) as well as other languages. Previous analyses either (i) focus on the positive marker and simply stipulate the negative polarity of the negative counterpart (e.g. Rullmann 2003), or (ii) derive the negative polarity but give diverging analyses for the two particles by analyzing the positive as a conjunction and the negative as an NPI disjunction (Ahn, 2015, Gajić, 2017). Since the positive additive particle also doubles as a conjunction in many of the languages where this pattern is encountered, the move to give it a conjunctive semantics is well-motivated. The problem faced by these accounts, however, is how to extend this semantics to account for the negative particle since there is no principled way to derive the behavior of NPIs based on the universal hypothesis.

The goal of this project is to offer a uniform analysis that has both markers making the same semantic contribution. The polarity restriction of the negative particle will be derived by positing an additional requirement on the particle, similarly to one carried by other NPIs.

Positive additives we take to be semantically vacuous but to trigger obligatory exhaustification with respect to an alternative proposition containing a silent exhaustification operator, as in (4a). This analysis follows in the footsteps of other similarly-minded proposals for additive particles (Bade, 2015, Mitrović and Sauerland, 2016, Szabolcsi, 2017). The semantics of a sentence containing an additive will thus be the expected conjunctive meaning in (4b), that both the host proposition and a relevant alternative are true: *p and not only p*.

(4) LF: *exh*[şi p]
a. $Alt(\text{şi p}) = \{p, exh\ p\} = \{p, p \wedge \neg q\}$
b. $[\![exh\ \text{şi p}]\!] = p \wedge \neg(p \wedge \neg q) = \boxed{p \wedge q}$

(5) $exh(p) = p \wedge \forall q[q \in \text{IE}(p, Alt(p)) \rightarrow \neg q]$
where $\text{IE}(p, Alt(p)) =$
$\lambda q \in Alt(p).\neg\exists r \in Alt(p)[(p \wedge \neg q) \rightarrow r]$

When *şi* co-occurs with negation, there are 3 possible LFs, provided below. For reasons we discuss later, LF3 is not a possibility, leaving only (6) and (7) as contenders. Since vacuous occurrence of *exh* are ruled out on economy considerations, this leaves only (7) as a possible LF.

(6) LF1: *exh*[¬ şi p]
$Alt(\ldots) = \{\neg p, \neg exh\ p\}$
$[\![\text{LF1}]\!] = \boxed{\neg p}$

(7) LF2: ¬ *exh*[şi p]
$Alt(\ldots) = \{p, exh\ p\}$
$[\![\text{LF2}]\!] = \neg[p \wedge \neg(p \wedge \neg q)]$
$= \boxed{\neg p \vee \neg q}$

(8) LF3: *exh*[şi ¬ p]
$Alt(\ldots) = \{\neg p, exh\neg p\}$
$[\![\text{LF3}]\!] = \neg p \wedge \neg(\neg p \wedge q)$
$= \boxed{\neg p \wedge \neg q}$

LF2 delivers the correct meaning for (2): if we take the first sentence to assert q and the second to assert $\neg p \vee \neg q$, their conjunction will deliver $q \wedge \neg p$, namely that Mary drank wine but not beer. The use of *şi* under negation is strongly marked (prosodically too), which is predicted since its contribution weakens the overall meaning. This is supported by recent work which argues that the use of *exh* must lead to strengthening, and if it doesn't, it must be signaled prosodically. This is reminiscent of the use of focused disjunction under negation, namely embedded exhaustification that leads to a weaker meaning (Fox and Spector, 2018). LF2 also explains the unacceptability of a negative antecedent to *şi*, since following up $\neg q$ with the weaker $\neg p \vee \neg q$ is unacceptable.

Negative additives Within the exhaustification framework for implicature calculation of Chierchia, Fox, and Spector 2012, polarity restrictions are the result of obligatory exhaustification of

alternatives (Chierchia, 2013, Crnič, 2014, Spector, 2014, Nicolae, 2017). We adopt a similar approach here. *Nici*, like *şi*, is vacuous modulo the signal for obligatory exhaustification. *Nici* can reasonably be argued to be composed of *ni*, the prefix used elsewhere in the language to create NPIs, and the additive marker *şi*. Let's assume that each morpheme carries an inherent focal feature, and that such features indicate active alternatives which must be used up (Chierchia 2013). This amounts to saying that *nici* will undergo two rounds of exhaustification, notated as exh^{si} and exh^{ni}. The alternatives considered by exh^{ni} are the formal alternatives, derived by replacing lexical items with other lexical items, and constituents with their sub-constituents, as in (9a). In UE exh^{ni} is vacuous, since any possible alternative is either as strong, or weaker. The unacceptability of *nici* in UE thus follows.

(9) $[_{②}\ exh^{ni}\ [_{①}\ exh^{si}$ [nici p]]

a. $Alt(①) = \{exh^{si}[\text{nici p}], exh^{si}[\text{nici q}], \text{p}, \text{q}\}$
$= \{p \wedge q, p \wedge q, p, q\}$

b. $[\![②]\!] = [\![exh^{ni}]\!]([\![①]\!]) = \boxed{p \wedge q} \leftarrow$ vacuous!

In the presence of negation the *exh* operator associating with *ni* can apply above the negation, as in (10). Recursive application results in a strengthened meaning. This method of deriving strengthening from the disjunction of two negated propositions into their conjunction is similar to how free choice conjunctive inferences are derived (Fox, 2007).

(10) $[_{③}\ exh^{ni}[_{②}\ exh^{ni}\ [_{①}\neg\ exh^{si}$ [nici p]]]]

a. $[\![①]\!] = \neg(p \wedge q)$

b. $Alt(②) = \{exh^{ni}\ \neg exh^{si}$ [nici p], $exh^{ni}\ \neg exh^{si}$ [nici q], $exh^{ni}\ \neg$p, $exh^{ni}\ \neg$q$\}$
$= \{\neg(p \wedge q), \neg p \wedge q, \neg q \wedge p\}$

c. $[\![③]\!] = [\![exh^{ni}]\!]([\![②]\!]) = \neg(p \wedge q) \wedge \neg(\neg p \wedge q) \wedge \neg(p \wedge \neg q) = \boxed{\neg p \wedge \neg q} \leftarrow$ strengthened!

Taking stock We account for the negative polarity status of *nici* by taking it to carry an additional focal feature triggering a second level of exhaustification. This analysis parallels that of other positive/negative pairs in the QP domain, e.g., *some* vs. *any*. The novelty of this analysis comes from the fact that we posit neither a disjunctive nor a conjunctive analysis for these particles. Instead, we posit an additive semantics as the core, and derive the two distinct interpretations from it (a conjunctive interpretation for *şi* and a narrow-scope disjunctive interpretation for *nici*). 2 questions remain. Why can't *şi p* have the LF in (10)? The answer to this has to do with the fact that a single morpheme, like *şi*, can only carry one focal feature, and thus can only have one (possibly recursive) instance of exhaustification. The second question is what prevents the LF in (8). To rule this out we can appeal to the subset principle, adopted from Distributed Morphology, and claim that the use of *şi* is morphologically blocked due to the existence of a more specific entry, *nici*; one particular implementation would have *şi* associated with the feature ADD and *nici* with the feature bundle ADD-NEG. **Presuppositionality** The contribution of additives is generally taken to be presuppositional, contrary to what is being proposed here, but see Abrusán 2014 and Ahn 2015 for arguments against a presuppositional account. What appears to be a presupposition, we argue, is actually anaphora to the alternative set.

Outlook • These additives can also convey an *even*-like meaning, but crucially only when the associate is focused. For example, (1) could furthermore convey that drinking beer is less likely whereas (3) that not drinking beer is less likely. This additional component can be derived if we assume that the focus feature on the associate allows for further exhaustification via a covert EVEN operator (Lahiri 1998). In the context of negation, covert EVEN would scope over the negation and contribute the presupposition that its associate $\neg p$ is less likely than an alternative $\neg q$. • *Nici* is restricted to strongly negative environments, like other strong NPIs. Why some NPIs are more restricted than others remains an open question, one which we cannot address here, but see Fălăuş and Nicolae (2016) for a possible derivation. • Note that Ahn's analysis can also account for this data. Future work will aim to understand whether one or both of these analyses are necessary. In doing so it is worth keeping in mind that the English NPI additive *either* does not allow for an *even* interpretation. One might speculate that this is related to the fact that *either* also functions as a positive disjunction, but more work is necessary.

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