

## Monotonicity Constraints on Negative Polarity in Hindi

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### 0 Introduction

Certain aspects of negative polarity item (NPI) licensing in languages like English and Dutch have been accounted for in the literature in terms of downward monotonicity. It is shown here that such a treatment must be augmented in the case of languages like Hindi to take into consideration the interaction of focus particles with NPIs.

In this paper, by Hindi I mean the dialect spoken in Delhi and referred to variously as Hindi-Urdu, Urdu, and Hindustani. The discussion is organized as follows: Section 1 introduces the relevant empirical facts about English and the theoretical background; Section 2 discusses NPIs in Hindi from the logical perspective introduced in Section 1; and Section 3 consists of concluding remarks.

### 1 NPIs and monotonicity

The role of downward monotone or monotone decreasing expressions in NPI licensing has been well known since (Ladusaw 1979). In this section, I begin by summarizing the known facts about NPI licensing in English. These facts, along with related work on Dutch and German NPIs (see Zwarts 1986, van der Wouden 1997, among others), seem to indicate that NPIs tend to present a hierarchical behavior in these languages and presumably cross-linguistically. Next, I examine the mathematical notion of monotonicity in natural language in order to set the stage for the discussion to follow. I conclude this section by summarizing van der Wouden's (1997) account of NPI licensing.

## 1.1 Some facts about NPIs

Klima (1964) showed that certain words and phrases must appear within the scope of a negative element in order to be acceptable in a well-formed sentence. Some simple examples from English, where the licenser in question is *not* (or *n't*), are *any*, *a bit*, and *half bad*; see van der Wouden (1997:141) and McCawley (1988:562–3) for a detailed discussion of these and other NPIs. Comparing the pairs given in examples (1) to (3), it is clear that each of the NPIs must be licensed by—in other words, must appear in the presence of—the negative element *n't*. (In subsequent examples, the licensing environment is shown in **bold letters** and the NPIs in *italics*; bold letters do not indicate intonational prominence.) In (2b), although a literal reading is available in the positive context, the NPI reading is not; such NPIs are known as *minimizers* (see Bolinger 1972 and Horn 1989:399–400).

- (1) a. John hasn't talked about *any* of these problems.  
 b. \*John has talked about *any* of these problems.
- (2) a. John wasn't *a bit* happy about these problems.  
 b. #John was *a bit* happy about these problems.
- (3) a. This new book on semantics isn't *half bad*.  
 b. \*This new book on semantics is *half bad*.

It turns out, however, that the presence of such a negative element is a sufficient but not a necessary condition for NPI licensing, and that English NPIs display a hierarchical behavior with respect to their licensing environments. As an illustration of this hierarchical behavior, consider the three NPIs *any*, *a bit*, and *half bad* and the constraints on their appearance in the presence of the licensors *few students*, *no-one*, and *not*.

- (4) a. **Few students** are aware of *any* of these facts.  
 b. **No-one** is aware of *any* of these facts.  
 c. John hasn't read *any* of these books.
- (5) a. \***Few students** were *a bit* happy about these facts.  
 b. **No-one** was *a bit* happy about these facts.  
 c. John wasn't *a bit* happy about these facts.
- (6) a. \***Few amateur actors** were *half bad*.  
 b. \*Among the amateur actors, **no-one** was *half bad*.  
 c. This new book on semantics isn't *half bad*.

The above facts may be conveniently summarized in tabular form:

Table 1

	<i>any</i>	<i>a bit</i>	<i>half bad</i>
<b>few students</b>	✓	*	*
<b>no-one</b>	✓	✓	*
<b>not/n't</b>	✓	✓	✓

A caveat is in order here. It is arguable whether *half bad* is in fact an NPI as claimed, *inter alia*, by McCawley (1988:562–3), and it may turn out that English has very few or no NPIs that appear only with *not* or *n't* and not with licensors like *no-one* (Yoshimura 1996, and M. Israel, p.c.). This latter view may well be correct and it may be that English only has NPIs that have the same distribution as *any* and *a bit* as shown above. However, English NPIs are used here merely for illustrative purposes. The point is that NPIs of several languages (Dutch and Japanese, among others) display the kind of three-way distinction presented for English above. The specific claims for English are not crucial in this respect to the discussion that follows.

With this caveat in mind, what is required for the above data is an explanation of three facts: why is the NPI *any* permitted in the scope of all the three licensors *few students*, *no-one*, and *not*, as in (4); why is *a bit* allowed only in the scope of *no-one* and *not* but not *few students*, as in (5); and why does *half bad* appear only in the scope of *not* and not *few students* or *no-one*, as in (6). Zwarts (1986), van der Wouden (1997), and others, developing Ladusaw's (1979) ideas, have in fact provided an account of these English facts. Before describing Zwarts' and van der Wouden's treatment of NPI licensing, first let us review the phenomenon of monotonicity in natural language.

## 1.2 Monotonicity and Natural Language

Ever since Barwise and Cooper 1981, noun phrases (NPs) have been treated as generalized quantifiers, that is, as (higher order) set-theoretic entities consisting of collections of sets. Moreover, certain quantified NPs, such as *few N* and *at most n N*, happen to have the set-theoretic property of being closed under subsets: given a universe  $U$ , sets  $X$  and  $Y$ , and a (generalized) quantifier  $Q$ , if  $X \in Q$  and  $Y \subseteq X \subseteq U$ , then  $Y \in Q$ . Such quantifiers are known as *downward entailing* or *monotone decreasing* (Barwise and Cooper 1981).

Monotone decreasing quantifiers contrast with *upward entailing* or *monotone increasing* quantifiers such as *every N*, and *at least n N* which have the property of being closed under supersets. In set-theoretic notation, upward entailment amounts to the following statement: if  $X \in Q$  and  $X \subseteq Y \subseteq U$ , then  $Y \in Q$ .

As an example of downward entailing expressions, consider the sentence *few men ran* which contains the downward entailing quantifier *few men*. Given the truth of this expression, we can conclude that the expression *few men ran slowly* must also be true. Here, the set of slow runners is in general a proper subset of the set of runners. The converse, however, is not true. That is, given that *few men ran slowly* is true, we cannot conclude that *few men ran* must also be true. In other words, we can't reason from a set such as one characterizing the property of running slowly to one of its supersets, which in this case is the set characterizing the property of running. The discussion in this paper is limited to noun phrases as generalized quantifiers, which take the verb phrase denotation as argument. However, it is also possible to consider a determiner as a two-place relation which takes the noun and the verb phrase as arguments. In such a case, one can then speak of downward and upward monotonicity applying independently to both the first and second arguments of the determiner. For example, the generalized determiner *every* can be regarded as taking two arguments, a first argument, such as *woman*, with which it forms an NP, *every woman* and a second argument, such as the verb phrase *is running*, to form the sentence *every woman is running*. As the reader can verify, *every* happens to be downward monotone in its first argument, but upward monotone in its second argument: *every woman is running* entails *every tall woman is running* but not *every woman is running in the park*. In this paper, when talking about NPs as NPI licensors, in the case where I describe an NP as monotone decreasing, it should be clear that I am referring to the monotonicity property as applying to the second argument of the generalized determiner in question.

Zwarts (1996:175) and van der Wouden (1997:94–111) note that there is an alternative, boolean algebraic way of determining monotonicity. I adapt their results to present the following simplified schemata.

(7) a. **Schema 1**

An NP is monotone decreasing iff the following is logically valid:

$NP (VP_1 \text{ or } VP_2) \rightarrow (NP VP_1 \text{ and } NP VP_2)$

b. **Schema 2**

An NP is anti-additive iff the following is logically valid:

$NP (VP_1 \text{ or } VP_2) \leftrightarrow (NP VP_1 \text{ and } NP VP_2)$

c. **Schema 3**

An NP is antimorphic iff the following are logically valid:

$NP (VP_1 \text{ or } VP_2) \leftrightarrow (NP VP_1 \text{ and } NP VP_2)$

$NP (VP_1 \text{ and } VP_2) \leftrightarrow (NP VP_1 \text{ or } NP VP_2)$

Next, we examine the natural language counterparts of these three classes of functions. Looking first at monotone decreasing functors as defined in Schema 1, note first of all that Schema 1 corresponds to one half of the first of De Morgan's laws of negation, stated

below. In other words, monotone decreasing functors are weakly negative contexts, since they satisfy only part of De Morgan's first law.

- (8) a. De Morgan's First Law:  
 $\neg(p \vee q) \leftrightarrow (\neg p \wedge \neg q)$   
 b. De Morgan's Second Law:  
 $\neg(p \wedge q) \leftrightarrow (\neg p \vee \neg q)$

In English, several NPs qualify as monotone decreasing on the basis of the test given in Schema 1; Zwarts (1996:176) lists twenty-one such NPs but we consider only two, *few N* and *at most n N*, by way of illustration. Applying Schema 1 to the expression *few men*, we find that it does indeed satisfy the schema.

- (9) a. **Few men** drink or smoke  $\rightarrow$  ( $\nrightarrow$ ) **few men** drink and **few men** smoke.  
 b. **At most two men** drink or smoke  $\rightarrow$  ( $\nrightarrow$ ) **at most two men** drink and **at most two men** smoke.

Turning now to anti-additive functors as defined in Schema 2, notice that the definition corresponds to the first of De Morgan's laws in its entirety. In other words, these constitute a stronger negative context than monotone decreasing functors. Zwarts (1996:184) lists eleven NPs that qualify as anti-additive, but we consider only two for purposes of illustration, *no N* and *none of the N*.

- (10) a. **No men** drink or smoke  $\leftrightarrow$  **no men** drink and **no men** smoke.  
 b. **None of the men** drink or smoke  
 $\leftrightarrow$  **none of the men** drink and **none of the men** smoke.

It is obvious from the schemata in (7) that anti-additive expressions constitute a subset of monotone decreasing ones, since anti-additivity is simply a more restrictive condition than monotone decreasingness. The significance of this fact is that if an NPI is licensed in a monotone decreasing context, it must necessarily be licensed in an anti-additive one as well; however, the converse is not true, as we will presently see. Put another way, all anti-additive contexts, which satisfy the more restrictive biconditional in Schema 2, are also monotone decreasing ones, since they naturally satisfy the less restrictive implication of Schema 1 in (7a); the converse is not true. A similar distinction holds between anti-additive expressions and antimorphic expressions: antimorphic expressions are a subset of anti-additive expressions. By transitivity, it follows that antimorphic expressions are a subset of monotone decreasing ones as well.

With these distinctions in mind, I now present a summary of van der Wouden's (1997) conclusions regarding negative polarity and its connection to downward monotonicity.

### 1.3 Strong, medium and weak NPIs and monotonicity in English

To recall the case of English, shown in (4) to (6) and repeated below, *any* appears in all downward entailing contexts (i.e., monotone decreasing, anti-additive, and antimorphic), *a bit* only in anti-additive contexts (i.e., anti-additive and antimorphic), and *half bad* only in antimorphic contexts.

- (11) a. **Few students** are aware of *any* of these facts.  
 b. **No-one** is aware of *any* of these facts.  
 c. John hasn't read *any* of these books.
- (12) a. \***Few students** were *a bit* happy about these facts.  
 b. **No-one** was *a bit* happy about these facts.  
 c. John wasn't *a bit* happy about these facts.
- (13) a. \***Few amateur actors** were *half bad*.  
 b. \*Among the amateur actors, **no-one** was *half bad*.  
 c. This new book on semantics isn't *half bad*.

Van der Wouden (1997) refers to NPIs like *any* as 'weak', those like *a bit* as 'medium', and those like *half bad* as 'strong'. The idea is that weak NPIs appear in all weak negative contexts (and this encompasses the three kinds of negative contexts), medium NPIs appear in medium negative contexts (all anti-additive contexts, and therefore all antimorphic contexts), and strong NPIs appear only in strong negative contexts (antimorphic contexts). To summarize van der Wouden's view of NPIs:

- (14) a. **Definition 1**  
 An NPI is weak iff it is licensed in monotone decreasing contexts.
- b. **Definition 2**  
 An NPI is medium iff it is licensed in anti-additive contexts.
- c. **Definition 3**  
 An NPI is strong iff it is licensed in antimorphic contexts.

These facts indicate that, at least in the case of English, the strong, medium, and weak distinction of NPIs is meaningful and sheds new light on the factors constraining the occurrence of NPIs in natural language. Moreover, van der Wouden claims similar results for Dutch, and Vasishth (1998a) for Japanese.

These results are summarized in Table 2 below. The first row in Table 2 lists the three kinds of NPIs discussed above; the next three rows give examples of such NPIs from English, Dutch, and Japanese; and the remaining three rows show the three different NPI licensing contexts. A check mark (✓) indicates that the NPI-type in question is allowed in a given licensing context. For example, *any* is allowed in any monotone decreasing context. Similarly, an asterisk (\*) indicates that the NPI-type in question is not allowed in a given licensing context. For example, *a bit* is only allowed in anti-additive (and therefore also antimorphic) contexts.

Table 2

	weak NPI	medium NPI	strong NPI
English	<i>any</i>	<i>a bit</i>	<i>half bad</i>
Dutch	<i>kunnen uitstaan</i>	<i>ook maar iets</i>	<i>mals</i>
Japanese	<i>hitokoto-demo-morasu</i>	<i>siyooto-demo-suru</i>	<i>dare-mo</i>
monotone decreasing	✓	*	*
anti-additive	✓	✓	*
antimorphic	✓	✓	✓

These results for English, Dutch and Japanese naturally raise the question whether other languages have a similar distinction among their NPIs. The next section is an attempt to answer this question with regard to Hindi.

## 2 Hindi Negative Polarity Items

In this section I examine the licensing constraints on Hindi NPIs. First, I establish the existence of monotone decreasing, anti-additive, and antimorphic contexts in Hindi. Then, a diverse collection of NPIs is introduced, which are classified according to whether they (optionally or obligatorily) take the suffix *-bhii*, 'also, even', and/or *-tak*, 'until, even' (see Vasisht 1997 for more details on the semantics of *-bhii* and *tak*). Next, it is demonstrated that these NPIs separate into three classes, corresponding to van der Wouden's (1997) three-way distinction. That is, I provide two distinct classifications of the NPIs in question: (a) a classification based on suffixation restrictions; and (b) another based on licensing restrictions.

To anticipate the generalizations empirically arrived at below, several facts emerge about Hindi NPIs with respect to their co-occurrence with the focus particles *-bhii* and *-tak*. When *-bhii* is suffixed to an NPI, it forces that NPI to become weak, irrespective of whether the NPI itself was originally weak, medium, or strong. Moreover, whenever *-tak* is suffixed to an NPI, that NPI becomes medium, irrespective of whether the NPI itself was

weak, medium, or strong. These results appear to have cross-linguistic validity since the tendency of elements like *-bhii* and *-tak* to participate crucially in the licensing of NPIs is present in Japanese as well, although the interaction with NPIs of the corresponding Japanese elements *mo*, 'also, even', and *demo*, 'even', is quite different (Vasishth 1998a).

## 2.1 Negative Polarity licensors in Hindi

First consider *kam-hii N*, 'few-ENCL(ITIC) N', and *aadhe se kam N*, 'less than half (of all the) N'. These turn out to be monotone decreasing but not anti-additive or antimorphic, as the bracketed invalid implications indicate. In the following discussion, although the enclitic *-hii* functions as a marker indicating emphasis, *-hii* has a somewhat more complex semantics: it also corresponds semantically to *only*, but only in a restricted sense, as discussed in detail in Vasishth 1998b.

- (15) a. **kam-hii bacce** naacte yaa gaate haĩ  
 few-ENCL children dance or sing are  
 → (↯) **kam-hii bacce** naacte haĩ aur **kam-hii bacce** gaate haĩ  
 few-ENCL children dance are and few-ENCL children sing are  
 'Few children dance or sing → (↯) few children dance and few children sing.'
- b. **aadhe se kam** bhaaratīya jaapaanii bol yaa paḍh sakte haĩ  
 half from less Indians Japanese speak or read can are  
 → (↯) **aadhe se kam** bhaaratīya jaapaanii bol sakte haĩ  
 half from less Indians Japanese speak can are  
 aur **aadhe se kam** bhaaratīya jaapaanii paḍh sakte haĩ  
 and half from less Indians Japanese read can are  
 'Less than half of all Indians can speak or read Japanese → (↯) less than half of all Indians can speak Japanese and less than half of all Indians can read Japanese.'

By contrast, the antecedent of the conditional *agar*, 'if ...', and the phrasally negated proper noun (PN) *PN nahī*, 'not PN', exhibit anti-additivity, as (16a) and (17a) show, but not antimorphicity, as (16b) and (17b) show.

- (16) a. muj-he bahut dukh hogaa **agar** tum-ne sharaab yaa sigareṭ piinii shuruu  
 me-to much sadness will-be if you-ERG alcohol or cigarette drink begin  
 kii ↔ muj-he bahut dukh hogaa **agar** tum-ne sharaab piinii shuruu kii aur  
 do me-to much sadness will-be if you-ERG alcohol drink begin do and  
**agar** tum-ne sigareṭ piinii shuruu kii  
 if you-ERG cigarette drink begin do

'I'll be very unhappy if you start drinking or smoking ↔ I'll be very unhappy if you start drinking and I'll be very unhappy if you start smoking.'

- b. muj-he bahut dukh hogaa **agar** tum-ne sharaab aur sigareṭ piinii shuruu  
 me-to much sadness will-be if you-ERG alcohol and cigarette drink begin  
 kii ↯ muj-he bahut dukh hogaa **agar** tum-ne sharaab piinii shuruu kii yaa  
 do me-to much sadness will-be if you-ERG alcohol drink begin do or  
**agar** tum-ne sigareṭ piinii shuruu kii  
 if you-ERG cigarette drink begin do  
 'I'll be very unhappy if you start drinking and smoking ↯ I'll be very unhappy if  
 you start drinking or if you start smoking.'

- (17) a. **samiir nahī** naactaa yaa gaataa

Samir not dance or sing

↔ **samiir nahī** naactaa aur **samiir nahī** gaataa

Samir not dance and Samir not sing

'It is not Samir who dances or sings ↔ It is not Samir who dances and it is not  
 Samir who sings.'

- b. **samiir nahī** naactaa aur gaataa

Samir not dance and sing

↯ **samiir nahī** naactaa yaa **samiir nahī** gaataa

Samir not dance or Samir not sing

'It is not Samir who dances and sings ↯ It is not Samir who dances or it is not  
 Samir who sings.'

Finally, sentential negation *nahī* and *naa*, like their English counterpart *not* or *n't*, are antimorphic (I do not present the corresponding sentences for *naa* here or in subsequent examples, but this can easily be done):

- (18) a. rahul naactaa yaa gaataa **nahī** ↔ rahul naactaa **nahī** aur rahul gaataa **nahī**  
 Rahul dances or sings not Rahul dances not and Rahul sings not  
 'Rahul does not dance or sing ↔ Rahul does not dance and Rahul does not sing.'
- b. rahul naactaa aur gaataa **nahī** ↔ rahul naactaa **nahī** yaa rahul gaataa **nahī**  
 Rahul dances and sings not Rahul dances not or Rahul sings not  
 'Rahul does not dance or sing ↔ Rahul does not dance and Rahul does not sing.'

Thus it is clear that Hindi also has the three kinds of downward entailing expressions (i.e., monotone decreasing, anti-additive, and antimorphic expressions) discussed for English. Before looking at the behavior of several Hindi NPIs in these licensing environments, I first present a classification of the NPIs.

## 2.2 A suffixation-based classification of Hindi NPIs

Nineteen NPIs in Hindi are considered in the following discussion. These NPIs fall into three groups: Group I, whose members do not accept either of the focus particles *-bhii* or *-tak*; Group II, whose members can accept *-bhii* but never *-tak*; and Group III, whose members can accept *-bhii* or *-tak*, or both. In the following examples, I give each NPI in the antimorphic context *nahī*; in a corresponding positive sentence, each NPI is ungrammatical or, if the NPI is a minimizer, allows only a jocular or literal reading, not the NPI reading.

### 2.2.1 Group I (or Bare) NPIs

- (19) a. *koi baat (\*-bhii/\*-tak) nahī*  
 IDIOM even not  
 'It doesn't matter.'
- b. *tum-he uttar dene-kii koi-zaruurat (\*-bhii/\*-tak) nahī*  
 you-to answer giving some-need even not  
 '(There is) no need for you to answer.'
- c. *tum-he uttar dene-kii koi-aavashyaktaa (\*-bhii/\*-tak) nahī*  
 you-to answer giving some-necessity even not  
 '(There is) no need for you to answer.'
- d. *muj-he us kitaab-kaa sir-pair (\*-bhii/\*-tak) nahī samajh aayaa*  
 me-to that book-of head-foot even not understand came  
 'I couldn't make head or tail of that book.'
- e. *maī us siḍ-siḍe-ke muh (\*-bhii/\*-tak) nahī lagtaa*  
 I that rotten head mouth even not attach to  
 'I don't interact with that bad-tempered (man/woman) at all.'
- f. *muj-he kuch fark (\*-bhii/\*-tak) nahī paḍtaa*  
 me-to some difference even not fall  
 'It doesn't make any difference to me.'

### 2.2.2 Group II (or Bhii) NPIs

As mentioned earlier, these NPIs accept the suffix *-bhii* but not *-tak*. Note that the NPI in (20d) differs from the others in that the presence of *-bhii* is obligatory.

- (20) a. *koi (-bhii/\*-tak) nahī aayaa*  
 some even not came  
 'Nobody cam.' (Lit. 'Anyone did not come.')

- b. mai-ne *kisii-ko* (-*bhii*/\*-*tak*) **nahīī** dekhaa  
I-ERG some-ACC even not saw  
'I didn't see anyone.'
- c. sudhiir apne-aap padhai karne-kii *zaraa* (-*bhii*/\*-*tak*) koshish **nahīī** kartaa  
Sudhir himself study doing little even attempt not does  
'Sudhir doesn't try (even) a bit to study on his own.'
- d. māī *kisii haalat-mē* (-*bhii*/\*-*tak*) tumharii madad **nahīī** karuungaa  
I some state-in even your help not will do  
'I will not help you under any circumstances.'
- e. tuu-to prañav-ke juutii-ke nōk-ke *baraabar* (-*bhii*/\*-*tak*) **nahīī**  
you-FOC Pranav-of shoe-of tip-of equal even not  
'You're no match for Pranav.'
- f. harii *kataii* (-*bhii*/\*-*tak*) **nahīī** aisaa karegaa  
Hari completely even not like this will do  
'Hari would never do such a thing.'
- g. ramesh *bilkul* (-*bhii*/\*-*tak*) **nahīī** kaam kartaa  
Ramesh totally even not work does  
'Ramesh doesn't do a shred of work.'

### 2.2.3 Group III (or Bhii/Tak) NPIs

These NPIs accept *-bhii* or *-tak* (or both) as a suffix. The second NPI given below, *uf karnaa*, consists of an interjection, *uf* and the verb *karnaa*, 'to do', (past tense form: *kii*) and may be translated as '(not) to show distress'. For convenience, I gloss *uf* as ONOM, for onomatopoeic.

- (21) a. ramesh-ne harii-ko girte dekhaa  
Ramesh-ERG Hari-ACC falling saw  
lekin vo *ṭas se mas* (-*bhii*/*-tak*) **nahīī** huua  
but he budge an inch even not became  
'Ramesh saw Hari fall, but he didn't budge an inch (to help).'
- b. us-ne sab-kuch bec ḍaalaa lekin vimlaa-ne *uf* (-*bhii*/*-tak*) **nahīī** *kii*  
(s)he-ERG everything sold gave but Vimla-ERG ONOM even not did  
'(S)he sold off everything, but Vimla didn't show even the slightest distress.'
- c. ramesh-ne apnii bahin-kii shaadii-mē *tinkaa* (-*bhii*/*-tak*) **nahīī** hilaayaa  
Ramesh-ERG own sister-POSS marriage-in straw even not moved  
'Ramesh didn't lift a finger to help in his sister's marriage.'

- d. ravii-ne ganit-ke prashnō-kaa uttar dene-kii *koshish* (-bhii/-tak) **nahīī** kii  
 Ravi-ERG maths-of questions-of answer give-that attempt even not did  
 'Ravi didn't even try to answer the maths questions (in the exam).'
- e. ravi-ne sharaab-ko *muh* (-bhii/-tak) **nahīī** lagaayaa  
 Ravi-ERG alcohol-ACC mouth even not adhered  
 'Ravi didn't (even) touch the alcohol.'
- f. harish-ne pitaa-jii-ke saamne dar-ke-maare  
 Harish-ERG father-HON-of in front of fear-of-due to  
*muh* (-bhii/-tak) **nahīī** kholaa  
 mouth even not open  
 'Out of fear, Harish didn't (even) open his mouth in front of his father.'

Next, we determine the licensing constraints on these three types of NPIs, using the three kinds of NPI licensors discussed earlier.

### 2.3 Strong, medium and weak NPIs in Hindi

In this section, we will look at each group in turn, and try to determine if van der Wouden's three-way distinction is valid for these NPIs.

#### 2.3.1 Group I NPIs

The NPI considered in this group appear to be only strong or weak; no medium NPIs seem to exist among the Group I or Bare NPIs. An example of a strong Group I NPI is *sir-pair*, 'head or tail'; it is strong because it is only licensed in antimorphic contexts (like *nahīī*), but in general not in monotone decreasing contexts (like *kam-hii log*) or anti-additive ones (like *agar*).

- (22) a. \***kam-hii logō-ko** us kitaab-kaa *sir-pair* samajh aayaa  
 few-ENCL people-ACC that book-of head-foot understand came  
 'Only a few people could make head or tail of that book.'
- b. \***agar** tum-he us kitaab-kaa *sir-pair* samajh aayaa ho  
 if you-to that book-of head-foot understand came be  
 to muj-he samjhaao  
 then to-me explain  
 'If you have been able to make head or tail of that book, please explain it to me.'

- c. muj-he us kitaab-ka *sir-pair nahī* samajh aayaa  
to-me that book-of head-foot not understand came  
'I couldn't make head or tail of that book.'

An example of a weak Group I NPI is *kuch-fark*, 'some difference'; it is weak because it is licensed in all the three kinds of downward entailing contexts, as shown below.

- (23) a. **kam-hii vidyaarthiō-ko kuch-fark** paḍtaa hai  
few-ENCL students-ACC some-difference fall is  
agar vo fel ho jaayē  
if they fail become go  
'It bothers only a few students if they fail.'
- b. **agar** tum-he *kuch-fark* paḍtaa ho to abhii kah do  
if you-to some-difference fall be then now say give  
'Say so now if it makes any difference to you.'
- c. muj-he *kuch-fark nahī* paḍtaa  
me-to some-difference not fall  
'It doesn't make any difference to me.'

### 2.3.2 Group II NPIs

All these NPIs are strong or medium when they appear without the suffix *-bhii*, but become weak if *-bhii* is suffixed.

An example of a medium NPI is *kisii*, 'any(one)'; it is medium because it is not licensed in every monotone decreasing context, a case in point is *kam-hii log*, but is licensed in all anti-additive contexts (including, of course, antimorphic ones). Note that in (24a) the NPI reading of *kisii* is being considered. The literal interpretation of *kisii*, 'some(one)', would be acceptable in (24a), but this is not the interpretation we are interested in.

- (24) a. **\*kam-hii log** *kisii-kii* naukrii karnaa pasand karte hai  
few-ENCL people some-of service do like do are  
'Few people like to work for anyone.'
- b. **agar** *kisii-ko* paise caahiye hō to muj-he kaho  
if some-ACC money wants be then to-me say  
'Ask me if anyone needs money.'
- c. *kisii-ko* inaaam **nahī** milaa  
some-ACC prize not received  
'No-one got a prize.' (Lit. 'Anyone did not get a prize.')

However, this NPI becomes weak following the suffixation of *-bhii*. Note in the examples given below that the NPI *kisii-ko-bhii* (or *kisii-kii-bhii*) is licensed in all downward entailing contexts.

- (25) a. **kam-hii log** *kisii-kii-bhii* naukrii karnaa pasand karte haĩ  
 few-ENCL people some-of-even service do like do are  
 'Few people like to work for anyone.'
- b. **agar** tum-ne *kisii-ko-bhii* yah baat bataayii to bahut buraa hogaa  
 if you-ERG some-ACC-even this story tell then very bad will-be  
 'It won't be good (for you) if you reveal this story to anyone.'
- c. *kisii-ko-bhii* inaa**ñ** **nahii** milaa  
 some-ACC-even prize not received  
 'No-one got a prize.' (Lit. 'Anyone did not get a prize.')

### 2.3.3 Group III NPIs

Group III includes NPIs that are either strong, medium, or weak when they appear without the suffix *-bhii* or *-tak*, but suffixing *-bhii* makes them weak and, alternatively, suffixing *-tak* makes them medium.

Consider first the NPI *muh lagaanaa*, 'to touch'. Without *-bhii* or *-tak*, the NPI is medium, since it appears only in anti-additive contexts as in (26b) and antimorphic contexts as in (26c), but sounds odd or literal in the monotone decreasing, but not anti-additive, context in (26a).

- (26) a. **#kam-hii log** sharaab-ko *muh lagaatee* haĩ  
 few-ENCL people alcohol-ACC mouth adhere are  
 'Few people touch alcohol.'
- b. **agar** tum-ne sharaab-ko *muh lagaayaa* to maĩ tum-he chor duungii  
 if you-ERG alcohol-ACC mouth adhere then I you-to leave give  
 'If you as much as touch (the) alcohol, I'll leave you.'
- c. ravi-ne sharaab-ko *muh nahii lagaayaa*  
 Ravi-ERG alcohol-ACC mouth not adhered  
 'Ravi didn't (even) touch the alcohol.'

Judgements vary for (26a); for some speakers, (26a) is grammatical, rendering the NPI medium, not weak as I claim above. However, it is immaterial for this discussion whether this NPI is weak or medium; the crucial facts relate to the suffixation of *-bhii* and *-tak*, discussed below, and the judgements for these seem to be clear.

If *-bhii* is suffixed to the NPI *muh lagaanaa*, it becomes acceptable in monotone decreasing contexts as well, as shown in (27a).

- (27) a. **kam-hii log** sharaab-ko *muh-bhii lagaatee* haĩ  
few-ENCL people alcohol-ACC mouth-even adhere are  
'Few people even as much as touch alcohol.'
- b. **agar** tum-ne sharaab-ko *muh-bhii lagaayaa*  
if you-ERG alcohol-ACC mouth-even adhere  
to maĩ tum-he choĩ duungii  
then I you-to leave give  
'If you as much as touch (the) alcohol, I'll leave you.'
- c. ravi-ne sharaab-ko *muh-bhii nahĩĩ lagaayaa*  
Ravi-ERG alcohol-ACC mouth-even not adhered  
'Ravi didn't even as much as touch the alcohol.'

Suffixing *-tak* instead of *-bhii* to the NPI results in a literal reading when the NPI appears in the scope of a monotone decreasing expression, as shown in (28a). Here, as earlier, the judgement mark # indicates that the literal reading is possible, but the NPI reading is not.

However, in an anti-additive context, shown in (28b), and in an antimorphic context, shown in (28c), with *-tak* the NPI is grammatical.

- (28) a. #**kam-hii log** sharaab-ko *muh-tak lagaatee* haĩ  
few-ENCL people alcohol-ACC mouth-even adhere are  
'Few people even touch alcohol.'
- b. **agar** tum-ne sharaab-ko *muh-tak lagaayaa*  
if you-ERG alcohol-ACC mouth-even adhere  
to maĩ tum-he choĩ duungii  
then I you-to leave give  
'If you as much as touch (the) alcohol, I'll leave you.'
- c. ravi-ne sharaab-ko *muh-tak nahĩĩ lagaayaa*  
Ravi-ERG alcohol-ACC mouth-even not adhered  
'Ravi didn't (even) touch the alcohol.'

To take another example, *uf kamaa*, 'to express distress', is a strong NPI when it appears without any suffix. Notice that in (29a) and (29b) only the literal reading is available, which is consistent with the fact that *uf kamaa* is a minimizer (Bolinger 1972). We will not go into the details of the behavior of Hindi minimizers here; this is considered in detail in Vasishth 1998b.

- (29) a. #*gaṇit-mē fel hone-par kam-hii vidyarthii uf kartee haī*  
 mathematics-in fail become-on few-ENCL students ONOM do are  
 'It matters to few students if they fail in mathematics.'
- b. #*agar tum-ne injekshan lagne-par uf kii*  
 if you-ERG injection apply-on ONOM do  
 to maī tum-he ḍarpok samjhuun-gaa  
 then I you-to coward consider-will  
 'I'll consider you a coward if you make even a sound when you get the injection.'
- c. *us-ne sab-kuch bec ḍaalaa lekin vimlaa-ne uf nahī kii*  
 (s)he-ERG everything sold gave but Vimla-ERG ONOM not did  
 '(S)he sold off everything, but Vimla didn't show even the slightest distress.'

However, suffixing *-bhii* to *uf karnaa* transforms it into a weak NPI:

- (30) a. *gaṇit-mē fel hone-par kam-hii vidyarthii uf-bhii kartee haī*  
 mathematics-in fail become-on few-ENCL students ONOM-even do are  
 'It matters to few students if they fail in mathematics.'
- b. *agar tum-ne uf-bhii kii to maī tum-he ḍarpok samjhuun-gaa*  
 if you-ERG ONOM-even do then I you-to coward consider-will  
 'I'll consider you a coward if you make even a sound.'
- c. *us-ne sab-kuch bec ḍaalaa lekin vimlaa-ne uf-bhii nahī kii*  
 (s)he-ERG everything sold gave but Vimla-ERG ONOM-even not did  
 '(S)he sold off everything, but Vimla didn't show even the slightest distress.'

Moreover, if *-tak* is suffixed instead of *-bhii*, *uf karnaa* is transformed into a medium NPI:

- (31) a. ??*gaṇit-mē fel hone-par kam-hii vidyarthii uf-tak kartee haī*  
 mathematics-in fail become-on few-ENCL students ONOM-even do are  
 'It matters to few students if they fail in mathematics.'
- b. *agar tum-ne uf-tak kii to tum-he ḍarpok samjhuun-gaa*  
 if you-ERG ONOM-even do then you-to coward consider-will  
 'I'll consider you a coward if you make even a sound.'
- c. *us-ne sab-kuch bec ḍaalaa lekin vimlaa-ne uf-tak nahī kii*  
 (s)he-ERG everything sold gave but Vimla-ERG ONOM-even not did  
 '(S)he sold off everything, but Vimla didn't show even the slightest distress.'

To summarize the conclusions one can draw from the foregoing data:

- Bare NPIs (Group I) are either strong or weak.
- Bhii NPIs (Group II), when they appear without any suffix, are strong or medium, but the NPIs become weak if *-bhii* is suffixed.
- Bhii/Tak NPIs (Group III), when unsuffixed, are either strong, medium or weak, but suffixing *-bhii* makes them weak and suffixing *-tak* makes them medium.

These facts indicate that the presence of *-bhii* is associated with the logically less restrictive monotone decreasing context, while *-tak* is associated with the logically more restrictive anti-additive context.

#### 2.4 Some open questions

In this subsection, I mention several other related facts that could shed more light on the above facts or are currently unaccounted for.

A natural question to ask is: why do *-bhii* and *-tak* behave differently? One could argue from a lexicalist perspective that they simply have the boolean algebraic properties outlined in this paper. There are, however, some other differences between these two particles. I briefly mention these as a first step towards answering this question more comprehensively, and begin by listing some of the obvious differences.

- *-bhii* is a Sanskrit loanword, or a *tatsama* word, etymologically related to *-api*, 'also'; whereas, *-tak* is a *tadbhaava* loanword, taken from Middle Indo-Aryan *taavatkaa*.
- *-bhii* has all the properties of an *even*-NPI, while *-tak* behaves partly like a *wh*-NPI (Rullman 1996:7).
- *-bhii* behaves like an *inclusive focus particle* (König 1991) since, for example, (a) it is correlated with conjunction; (b) it combines with interrogative quantifiers like *koi* to form 'indefinite pronouns'; and (c) it is a part of the concessive connective *phir-bhii*, 'even so'. All of these are properties associated with inclusive focus particles; *-tak* has none of these characteristics.
- In a sentence like *raam-bhii nahī aayaa*, 'Ram also didn't come', there is no scalar presupposition that Ram was expected to come. However, in *raam-tak nahī aayaa*, 'Even Ram didn't come', a scalar presupposition exists to the effect that Ram was expected to come. In this connection, Lahiri (1998:59) argues that when *Raam* is focused, the utterance *raam-bhii aayaa* has an additional implicature to the effect

that Ram was the least likely to come, but he adds that this extra implicature could be the contribution of focus. He does not pursue this latter view, but this seems more plausible to me, and is the subject of a different paper (Vasishth 1997).

An interesting puzzle relates to an ordering constraint on *-bhii* and *-tak* when they co-occur. In the case of all the Group III NPIs (Bhii/Tak NPIs), if both *-bhii* and *-tak* occur simultaneously as suffixes, only the sequence *-tak-bhii* is permitted, never the sequence *-bhii-tak*. This is illustrated using one of the Group III NPIs.

- (32) a. ramesh-ne aadmii-ko girte dekhaa  
Ramesh-ERG man-ACC falling saw  
lekin vo *ʃas se mas-tak-bhii nahii* huaa  
but he budge an inch-even not became  
'Ramesh saw the man fall, but he didn't budge an inch (to help).'
- b. \*ramesh-ne aadmii-ko girte dekhaa  
Ramesh-ERG man-ACC falling saw  
lekin vo *ʃas se mas-bhii-tak nahii* huaa  
but he budge an inch-even not became  
'Ramesh saw the man fall, but he didn't budge an inch (to help).'
- c. **kam-hii** log ramesh-ko girte dekhkar *ʃas se mas-tak-bhii* hue  
few-ENCL people Ramesh-ACC falling seeing budge an inch-even became  
'Few people saw Ramesh fall and budged an inch (to help).'
- d. \***kam-hii** log ramesh-ko girte dekhkar *ʃas se mas-bhii-tak* hue  
few-ENCL people Ramesh-ACC falling seeing budge an inch-even became  
'Few people saw Ramesh fall and budged an inch (to help).'

What seems to be happening here is that the weak suffix *-bhii* must take wide scope over the medium suffix *-tak*. Why this happens is still an open question.

### 3 Conclusion

Given the foregoing evidence from Hindi, we can conclude, firstly, that Hindi patterns with English, Dutch, and Japanese in possessing weak, medium, and strong NPIs. This is summarized in Table 3.

Table 3

	weak NPI	medium NPI	strong NPI
English	<i>any</i>	<i>a bit</i>	<i>half bad</i>
Dutch	<i>kunnen uitstaan</i>	<i>ook maar iets</i>	<i>mals</i>
Japanese	<i>hitokoto-demo-morasu</i>	<i>siyouto-demo-suru</i>	<i>dare-mo</i>
Hindi	<i>kisii-ko-bhii</i>	<i>uf-tak karnaa</i>	<i>sir-pair</i>
monotone decreasing	✓	*	*
anti-additive	✓	✓	*
antimorphic	✓	✓	✓

Secondly, it is evident that Hindi NPIs present a somewhat more intricate behavior than being simply weak, medium, or strong: an NPI's logical nature changes depending on the suffix it takes. Generally, if the suffix is *-bhii*, then NPI becomes weak, and if the suffix is *-tak*, the NPI becomes medium.

In sum, this paper reveals a new aspect of Hindi NPIs, not present in the NPIs of languages studied by the Dutch and other linguists. The Hindi facts provide new insight into the logical properties of NPIs in language: we now know that although the pioneering research by Ladusaw, Zwarts, van der Wouden, and others has revealed a systematic connection between a hierarchy of negative contexts and NPIs, in languages like Hindi focus particles impose a further constraint on NPI licensing. An indication that this extra constraint on NPIs is systematic cross-linguistically is the independent evidence from Japanese (Vasishth 1998a).

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