Finding Structural Dependency: A Study of Bangla NPI ar

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ABSTRACT

Negative Polarity Items or NPIs are an important means to signal the kind of coherence relation holding between adjacent text spans. Research on NPIs has been mainly concerned only with its nature of dependency with negation or negative like environments whereas the other dependencies, such as with the presupposition or aspectual that some of NPIs share, have not received much attention. In this paper, we identify semantic and pragmatic features that are required to support a motivated choice of NPI in a conversational situation. The paper tries to address this issue with an emphasis on Bangla NPI ar. In due course the current work will illustrate how Bangla NPI ar can be used to produce alternative verbalizations of the temporal relationship holding between two events.

1. Introduction

Modeling discourse is often considered as a challenging task due to its inclination to the issues of context dependencies. Unlike the units of sentential level syntax and semantics, in discourse, the basic units of discourse are complex due to their infinitely many connections with other invisible aspects of discourse level phenomena like implication, entailment, presupposition etc. Because of sensitizing the issues of context sensitivity in a different way, often in discourse, expressions behave differently. The following examples will make this thing clear:

(1) ram ar rohim-ke SONge ni-le-i hO-b-e
    ram.NOM INDL rohim-ACC with take-COND-EMP be-FUT-3
    ‘If you take Ram and Rohim with you that will be enough.’

(2) ar bOchor-e dhan-Ta bhalo ho-ech-il-o
    ADJ year-LOC paddy-CLF good happen-PRF-PST-3
    ‘Last year the growth of paddy was good.’

(3) tomar SONe dEkha ar hO-b-e na
    you.POSS with see INDL happen-FUT-2 NEG
    ‘We will not meet anymore.’

A close look on these three examples makes it clear that ar broadly functions in two different ways, i.e. (i) it can either occur as a conjunctive indeclinable, or (ii) as a non-conjunctive indeclinable. As in (1) it occurs as a conjunctive particle having the sense of ‘and’, additionally its scope is restricted
within the NP (e.g. *ram ar rohim*) and being a conjunctive it is connected with two NPs (*ram* and *rohim*). In (2) *ar* is modifying the following NP (*bOchore*) and carries the sense of ‘previous’. On the contrary in (3), *ar* appears within the scope of the negation (e.g. *hObe na*) by doing that it brings the sense of ‘anymore’ in the expression.

Examples (1-3) show that *ar* not only behaves differently in its conjunctive and non conjunctive behavior but at the same, *ar* differs among its non conjunctive behavior as well. As in (2) it behaves as an adjective whereas in (3) it is more like a Negative Polarity Item or NPI due to its dependencies with negation. Keeping these behaviors of *ar* in mind, the current work will focus more on NPI *ar* in particular.

2. Research Objective

In continuation of the discussion of the previous sections, we would like to articulate the questions of our investigation in this section. The question, which seems to be of prime significance, is how an NPI functions in distinguishing the meanings of an utterance. In other word, how the meaning of an utterance undergoes transformation due to its connection with an NPI:

(4) How does NPI *ar* functions while specifying the meaning of an utterance? In other words, how is the meaning of an utterance transformed due to its connection with *ar*?

In order to find the answer of question (4), the following sub-questions need to be looked at:

(5) In discourse how to develop an account for the relationship existing between the different readings of an utterance with and without *ar*?
(6) What kind of systematic interconnections does *ar* project as its structural and functional nature?

To attain this above stated goal the paper will explore the dependency nature of NPI *ar* in Section 3. In Section 4 the discussion will further augmented with a discussion of some observations regarding the behavior of *ar* to elucidate how the current understanding of NPI can provide some important clues about the problem stated above. Finally, a theoretical framework will be proposed in Section 5 with an intention to provide a systematic formal account of NPI *ar*.

3. *ar* as a Negative Polarity Item or NPI

Negative Polarity Item or NPI is a term, used to identify linguistic expressions that show a level of dependency with negative or negation like environments. Reconsideration of example (3) will make this thing clear:

(7) tomar SONe dEkha hO-b-e na you.POSS with see happen-FUT-2 NEG ‘We will not meet.’
(8) tomar SONe ar dEkha hO-b-e na you.POSS with anymore see happen-FUT-2 NEG ‘We will not meet anymore.’

It is to observe here that the appearance of *ar* in (8) happens as it gets its license from negation. Contrarily the absence of negation will turn (8) into an ungrammatical one as observed in (9).
In continuation with this, the paper would like to consider the utterance like (10) as well:

(10) biral na rannaghOr-e aS-e
cat.NOM PRT/NEG kitchen-LOC come.PRS-3
a) ‘Cat comes in the kitchen.’
b) ‘Take care, so that cat does not come in the kitchen.’

Example (10) is an ambiguous utterance, as na could be interpreted in two ways, i.e. i) as a discourse particle and ii) as a negative marker. Being a discourse particle, na, does not contribute any negative information to the utterance rather it softens the speaker’s voice, as shown in (10a) (Dastidar and Mukhopadhay 2014).

Whereas in some other context utterance (10) could be construed as a negative utterance, in which by saying this utterance speaker is saying the addressee to keep an eye on cat (dekho, biral na ranaaghOre aSe), so that it does not come in the kitchen, as identified in (10b).

A comparison between the two interpretations, (10a) and (10b), of (10) suggest that ar does not appear in (10) with an interpretation of (10a), contrarily it definitely can if (10) can be read as (10b). The main reason behind this is – the first one is not a negative rather an affirmative one as na functions as a discourse particle over here. On the other hand the later one is primarily a negative utterance having a negative implication which in turn permits ar to occur. Consider below:

(11) (dekh-o) biral ar na rannaghOr-e aS-e
see.PRS-2 cat.NOM anymore NEG kitchen-LOC come.PRS-3
‘Take care so that cat does not come in the kitchen anymore.’

The behavior of ar as shown in (8) and (11) leads the paper to construe that, apart from its function as a conjunctive and modifier, ar shows a different kind of dependency in the propositional level where it gets its license only when that proposition is false or that proposition has a negative implication. More formally this could be presented in (12):

(12) **Licensing Condition:**
    ar must be contained in a proposition [p] iff that [p] is false or it has a negative implication, i.e. ar for its occurrence, requires the falsity or negativity of a specific proposition [p].

Bhadra et al. (2016) while discussing about strengthens properties of Bangla NPIs, identifies NPI ar as a strong NPI. The distinction about strong and weak NPI is revolves around Zwarts’ (1998) classification of NPIs in downward entailing, anti-additive and anti-morphic contexts. Zwarts (1998) in its influential paper identifies three laws of negative polarity. They are as follows:

(13) **Laws of Negative Polarity:**
    a. Only sentences, in which a monotone decreasing expression occurs, can contain a negative polarity item of the **weak type**.
    b. Only sentences, in which an anti-additive expression occurs, can contain a negative polarity item of the **strong type**.
c. Only sentences, in which an anti-morphic expression occurs, can contain a negative polarity item of the **super-strong type**.

Following these rules it has been noted that NPI *ar* appears in anti-additive context as a result of which *ar* has been identified as strong NPI. Anti-additive context is defined as follows:

\[(14) \textbf{Anti-Additive:} \quad \text{Let } B \text{ and } B^* \text{ be two Boolean algebras. A function } f \text{ from } B \text{ to } B^* \text{ is said to be anti-additive iff for each two elements } X \text{ and } Y \text{ of the algebra } B:\]

\[f(X \cup Y) = f(X) \cap f(Y)\]

\[(15) \quad \text{Not a single student smoke or drink} \iff \text{Not a single student smoke and Not a single student drink}\]

\[(16) \quad \text{Not every student smoke or drink} \nRightarrow \text{Not every student smoke and Not every student drink}\]

The example (15-16) shows that NOT(SOME(_)) is anti-additive but NOT(EVERY(_)) is not (Gajewski 2007)

*ar* being a strong NPI can appear in anti-additive context. Consider below:

\[(17) \quad \text{Emon Ekjono skule nei je ar krikeT ba fuTbOl bhalobaSe.} \iff \text{Emon Ekjono skule nei je ar krikeT bhalobaSe ebON Emon Ekjono skule nei je ar fuTbOl bhalobaSe.}\]

‘There is not a single student in school who loves cricket or football anymore.’

‘There is not a single student in school who loves cricket anymore and there is not a single student in school who loves football anymore.’

Furthermore, Bhadra *et al* (2016) while defining the strictness property of Bangla NPIs, identifies *ar* as a strict NPI. In pursuing this, they mainly followed Collins’s (2014) approach of strict NPI which is based on the syntactic approach to classical neg-raising. Before we go into the discussion of *ar* from the viewpoint of neg-raising, the paper would like to discuss this concept in brief.

Traditionally, Neg Raising (NR) is identified as syntactic operation, as noted by linguists like Fillmore (1963), Prince (1976). Under this hypothesis it has been said that Neg Raising Predicates (NRP) differs from other predicates – from this viewpoint that NRP allows negation to be raised across them. Consider the following example, from Gajewski (2007):

\[(18) \quad \text{Bill doesn’t think that Marry is here.}\]

\[(19) \quad \text{Bill thinks that Mary isn’t here.}\]

Gajewski (2007) argues that the example in (18) implies (19) as the negation from complement clause in (19) rises to the matrix clause and forms (18). However, this behavior is not evident in (20-21):

\[(20) \quad \text{Bill didn’t say that Mary is here}\]

\[(21) \quad \text{Bill said that Mary isn’t here.}\]

Contrary to (18-19), (20-21) indicates that these two are different from each other, as (20) does not
implicate (21). Thus it can be said that think is a neg-raising predicate whereas say is not.

While commenting on the relationship between NRPs and NPIs, Bhadra et al (2016) observes that strict NPIs gets its license in the complement of NRPs with a matrix negation but not with non-NRPs. The main reason behind this is that the negation in non-NRPs does not originate from the embedded clause, as we have seen in examples (20-21). Following this relation between strict NPIs and NRPs, Bhadra et al (2016) categorize ar as a strict NPI. Consider the following examples from Bhadra et al (2016):

(22) *bela NOM Sone-NEG je COM Onjon NOM anjan.NOM anymore song sing.PRS-3
tela.NOM hear-NEG COM anjan.NOM anymore song
‘Bela hasn’t heard that Anjan sings anymore.’

(23) bela NOM biSSaS kOra na je COM Onjon ar gan
bela.NOM believe do.PRS-3 NEG COM anjan.NOM anymore song
ga-y
sing.PRS-3
‘Bela doesn’t believe that Anjan sings anymore.’

In (22-23), it can be observed that Sona and biSSaS kOra are non neg-raising and neg-raising predicates respectively. Among these two predicates ar being a strict NPI does not occur in the complement clause of non-NRP (as in (22)) in spite of the fact that the matrix clause in negative; whereas in (23) ar occurs in the complement clause of NRP. Thus (23) can implicate (24):

(24) bela NOM biSSaS kOra na je COM Onjon ar gan
bela.NOM believe do.PRS-3 NEG COM anjan.NOM anymore song
ga-y
sing.PRS-3
‘Bela doesn’t believe that Anjan sings anymore.’

This behavior of ar categorizes it not only as a strong NPI but also as a strict NPI.

The discussion we have made so far clearly shows that ar's function is not limited to utterance modification or conjunction rather ar specifies its context of occurrence, i.e. in the negative context. This unique behavior of indeclinable ar makes it an NPI, and a more fine grained analysis identifies it as a strong and strict NPI. But the analysis, till now, is certainly not capturing the entire picture of ar that need to be addressed in the next section.

4. Presuppositional Dependency of ar

On the basis of the discussion of Section 3 it is more or less clear that ar shares a level of dependency with negatives or with negation like environments. But a closer look on these examples denotes that ar contains a bi-layered level of dependency at the level of utterance: In one layer, ar being NPI is dependent on negation; and, in other layer it has a dependency with the presupposition of the utterance as well. The following examples will make this thing clear:

(25) rasta-CONT.PRS-3 alo-gulo-CONT.PRS-3 jol-ch-e-CONT.PRS-3 na
road-GEN light-PL switch on-CONT.PRS-3 NEG
‘Street lights are not on.’

(26) rasta-CONT.PRS-3 alo-gulo ar jol-ch-e-CONT.PRS-3 na
road-GEN light-PL anymore switch on-CONT.PRS-3 NEG
‘Street lights are not on anymore.’

Compare (25) and (26): it is interesting to note here that both the utterances differ from each other depending on their presuppositions. As utterance (25) presupposes the following:

(27) rastay alo ache ‘there are lights in the street’
    alogulo sadharono jOle ‘street lights are usually on’

The presupposition of (25) as indicated in (27) confirms that the street lights are usually on but in one particular event (i.e. in 25) it is not true. The falsity of the fact in one particular moment does not affect the truth of the entire period. Whereas the insertion of *ar* changes the whole context as (26) presupposes the following:

(28) rastay alo ache ‘there are lights in the street.’
    rastay alo gulo age jolchilo ‘lights were on before.’

The insertion of *ar* presupposes (as in 28) a previous time in which street lights were on but they are not in the present context. In due course to make *ar* (*p*) relevant in the reference time (*t_ref*) the transition from positive state to the negative state of the proposition must have happened in the immediate scope of *t_ref*. Therefore (26) is only appropriate if there exist at least one sub-interval time in which *rastar alogulo jolchilo* ‘the lights were on’ is true. This necessary condition does not hold for utterance like (25).

Hence *ar* combines an assertion regarding the reference time in the utterance with a presupposition regarding an earlier moment. Krifka (2000) assumes that the sentence $\phi$ is true or false at time intervals $t$, i.e. $\phi(t)$ is true if and only if $\phi$ is true at time intervals $(t)$. In relation to this $t' \approx t$ expresses the fact that the interval $t'$ has started before $t$ and abuts at $t$. Following Krifka (2000) this could be summarized as below:

(29) $ar(t, \phi)$  Assertion: $\phi$ does not hold at $t$  $\neg \phi(t)$
    Presupposition: $\phi$ was true before $t$  $\exists t' \approx t \{ \phi(t') \}$

The presuppositional dependency of *ar* leads the paper to construe that *ar* modifies the context in which it has been used. It is important to mention here that the notion of context becomes relevant in identifying the knowledge state of the interlocutors as in conversation participants share certain information. Stalnaker (1974, 1978) suggests that in conversational situation it is the utterance of a sentence, rather than someone’s independent knowledge, has its impact on the information which is shared by the interlocutors. Thus the knowledge *ar* incorporates are shared in the sense that both the interlocutors mutually accept or *pragmatically presuppose* them. It implicates that in conversational context both interlocutors are aware of the fact the opposite person accepts this knowledge. Failure of which make the utterance (26) an infelicitous one.

In this juncture Stalnaker (1974, 1978) makes a crucial observation that this mutual acceptance is independent from truth or falsity of the proposition and even from the belief context of the interlocutors. As there can be a situation, in which one of the participants does not believe that the street lights used to be on before, but pretend that they do for the sake of conversation.

To sum up, the mutually accepted or pragmatically presupposed propositions forms a common ground that entails the contextually salient event was taking place at some previous time. Therefore it can be
concluded that (28) triggers the street lights were on at some previous time, and (26) will be admitted in the common ground with the inference that it is about the same event structure and *ar* being NPI negates the continuation of that event.

The discussion that we have made so far indicates that *ar*, due to its presuppositional dependency, always asks for an anchorage point. Due to which, it is important to find out the aspectual intrinsic property of *ar* in order to have the fuller interpretation of an utterance that contains *ar*. To attain this goal the paper will focus on the aspectual compositionality of *ar* in the next section.

5. Aspectual Compositionality of *ar*

The aspectual character of an utterance is agreed on by factors which interact in a hierarchical function. Swart (1998, 2012), in this respect proposes general temporal-aspectual structure which runs as follows:

(30) [Tense [ ASP* [ Situation Aspect]]]

According to Swart (1998, 2012) a proposition contains a situation aspect that denotes a set of states, activities, accomplishments, or achievements, in short ‘eventuality’. The aspectual operators, on the other hand, work recursively due to which ASP appears with star indicating zero, one or multiple instances. Expressions which are interpreted in ASP are basically modifiers that maps sets of eventualities onto (possibly other) sets of eventualities. In addition to this, there is one tense operator that takes a wide scope over situation aspect as well as aspectual operators and locates the eventuality with respect to the speech point on the time axis (Swart 1998, 2012). Having described this framework of temporal-aspectual structure the paper will try to interpret *ar* in ASP.

In Section 4, what we have established is the presence of an anaphoric element in the presupposition triggered by *ar*. In other words, the interpretation of *ar* seeks an anchorage point of time with respect to which the change of states can be talked about. Consider the example below:

(31) du din age rasta-r alo-gulo jol-ch-il-o Ekhon
two day before road-GEN light-PL switch on-CONT-PST-3 now
ar jol-ch-e na
anymore switch on-CONT.PRS-3 NEG
‘Two days back the lights were on. Not now anymore.’

The compositional structure of (31), represented in (32):

(32) [Present [ ar [ Street lights not be on]]]

In (32), *ar* can be defined as an operator that maps one set of homogeneous eventualities onto another one. In doing that it presupposes the occurrence of eventuality precedes the perspective point (*t* _pres_ ) and negates *t* _pres_ by including it in the same eventuality. The present tense operator when applied to this homogenous eventuality introduces a reference point which overlaps with the speech time. The inclusion of reference point and the perspective point in the ongoing situation satisfies the presupposition as well. This anaphoric dependency which is induced by *ar* creates a scope for an anchorage point. As a result of which (31) tolerates *Ekhon* in it.

Unlike (31), (26) can be interpreted in a different way where a different type of aspectual behavior of
*ar* can be noticed. Consider (33):

(33) du din age rasta-r alo-gulo Ekbar jol-ech-il-o  
tarpOr theke ar jol-ch-e na  
then since again switch on-CONT.PRS-3 NEG  
‘Two days back the lights were on for once. Since then the lights were non on again.’

What distinguishes (33) from (31) is the fact that here *ar* does not indicate any kind of discontinuity rather it negates the repetition of the event. Thus (26) will get the interpretation of (33) iff the first part of (33), i.e. *dudin age rastar alogulo Ekbar jolechilo*, holds. This could be represented more formally in (34), where *t* stands for the time interval that the sentence (26) is about.

(34) \( \exists t' \ [t' < t \& \text{the lights were on at } t'] \)

In this situation (in 34) the presupposition that *ar* triggers is that there is a previous time before the reference time that is included in the running time. But what differentiates *ar* in (33) from (31) is the fact that in (31) both presupposition and assertion are about the homogeneous eventuality whereas in (33) it is heterogeneous. The following example will make this more explicit:

(35) ei jama-Ta mina-r biye-te por-b-o kintu aditi-r  
this shirt-CLF mina-GEN marriage-LOC wear-FUT-1 but aditi-GEN  
buye-te por-b-o na marriage-LOC wear-FUT-1 NEG  
‘I will wear this shirt in Mina’s marriage but not in Aditi’s marriage.’

(36) ei jama-Ta mina-r biye-te por-b-o kintu aditi-r  
this shirt-CLF mina-GEN marriage-LOC wear-FUT-1 but aditi-GEN  
buye-te ar por-b-o na marriage-LOC again wear-FUT-1 NEG  
‘I will wear this shirt in Mina’s marriage but not in Aditi’s marriage again.’

A close look on these two examples will indicate that in (35) it is really hard to say about the temporal ordering of the events i.e. whether Aditi’s marriage follows Mina’s or vis-à-vis. Whereas in (36) the temporal order is quite clear as we naturally understand Aditi’s marriage to follow Mina’s. Therefore what we invoke from (36) is due to the presence of *ar*, since were this particle not there, we could have imagine the two events in the opposite temporal order.

Intuitively what we can conclude over here that *ar* in situations like (33) and (36) triggers an anaphoric presupposition. Additionally it requires that the salient eventuality be *past* to the reference time. But what differs *ar* in situation like (31) from (33) or (36) is the nature of eventuality (*e*) i.e., *e* must be presupposed to be either the same (homogeneous), as in (31), or different (heterogeneous), as in (33) or (36), from the salient one. In the former case *ar* negates the continuation of the event whereas in the later case it terminates the repetition of the event.

In addition to this, in heterogeneous eventuality *ar* is often instrumental in ceasing not only the repetitive reading but restitutive as well. Consider the examples below:

(37) ami Ekbar kOtha-Ta bol-ech-i ar bol-ch-i na  
I.NOM once topic-CLF say-PRF.PRS-1 again say-CONT.PRS-1 NEG  
‘I have said the topic once. Thus I’m not repeating myself again.’

\[\] It presupposes that I have said the topic before. Then it is true iff I am not saying the topic again.
I am not saying the topic again, as I have said that before.

(\text{\textit{\textbf{{\textbf{repetitive}}}}})

\begin{verbatim}
(38) umesh Ekbar kOtha-Ta bol-ech-e ami ar
    Umesh.NOM once topic-CLF say-PRF.PRS-2 I.NOM again
    bol-chi na say-CONT.PRS-1 NEG
    ‘Umesh have said the topic once. Thus I’m not repeating myself again.’
\end{verbatim}

-> It presupposes that the topic has been said before. Then it is true iff I am not saying the topic again.

= I am not saying the topic again, as the topic has been said before.

(\text{\textit{\textbf{{\textbf{restitutive}}}}})

The repetitive reading is often defined as an interpretation that presupposes that the kind of event described by the utterance has already occurred in previous time; whereas the restitutive reading is an interpretation that presupposes that the result state of the event described in the utterance has held before. The presence of \textit{ar} in (37-38) negates both the repetitive and the restitutive reading.

6. Conclusion

The discussion of this paper fleshes out the fact that in the conversational discourse the function of \textit{ar} is not limited only to conjoining or modifying expression rather it shares a dependency with negative or negation like environment. Due to this \textit{ar} has been identified as an NPI. In our discussion, we observe that NPI \textit{ar} is instrumental to organize a conversation by conveying information concerning the epistemic states of the speaker and hearer with respect to the context of utterance. Due to this, it shares a level of dependency not only within the utterance but across the utterances as well. This dynamic nature of NPI \textit{ar} is instrumental in construing broader aspect of meaning. It is also shown here that in case of the aspactual behavior contextual information is must to distinguish the difference of interpretations. In doing this, what \textit{ar} seeks for is basically an anchorage point of time with respect to the change of states. In most of the cases the change of states basically indicates a termination.

References


