Hindi pseudo-incorporation

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Abstract This paper argues that Hindi incorporation is, in fact, pseudo-incorporation, involving noun phrases rather than nouns. Furthermore, it shows that there is no requirement that the incorporated nominal surface as a morphological or even a syntactic unit with the verb. Such loosely aligned nominals can nevertheless be identified as incorporation on the basis of semantic intuitions having to do with number interpretation, anaphora, and certain properties typically associated with lexical processes. Contrary to standard assumptions, it is argued that the target of pseudo-incorporation is specified for number. Singular incorporated nominals in Hindi are shown to be semantically singular, with number neutrality arising as a consequence of interaction with aspectual operators. Taking aspectual information into account is also shown to have interesting implications for current approaches to the semantics of incorporation, one in which the incorporated nominal introduces a discourse referent, and one in which it functions as a predicate modifier. A closer look at the effect of aspect on anaphora, for example, does not unequivocally support the predicate modification view of pseudo-incorporation. The paper draws on data from Hungarian, and to some extent Danish, to explore the cross-linguistic applicability of the claims made on the basis of Hindi. Most notably, a distinction between Hungarian verbs with respect to incorporation of bare singulars provides striking confirmation of the claim that number morphology is semantically visible in pseudo-incorporation. It also addresses restrictions on the productivity of pseudo-incorporation in light of the proposed analysis of pseudo-incorporation.

Keywords Agreement · Anaphora · Aspect · Number-neutrality ·
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1 The nature of Hindi pseudo-incorporation

This paper has two goals. The first is to establish that Hindi incorporated nominals are phrasal and enjoy a great deal of syntactic freedom. That is, Hindi exemplifies a very liberal kind of pseudo-incorporation. The second is to account for the semantics of Hindi pseudo-incorporation. The discussion has obvious relevance for other languages with this construction, and some effort will be made to draw cross-linguistic connections, but the primary focus of this investigation is Hindi.

In the first part of the paper (Sects. 2–5) I will focus on the first task, beginning with a review of the properties typically associated with incorporation. This will place the discussion of Hindi within a cross-linguistic context. I will then proceed to establish the reality of incorporation in Hindi, showing that the target of such incorporation is NP not N. I will also show that these incorporated nominals can undergo movement. Finally, I will relate these claims to previous work on Hindi incorporation.

2 Identifying incorporation

The phenomenon known as *noun incorporation* is identifiable primarily on the basis of morphological and syntactic evidence about the shape and position of the nominal expression involved. Consider the Inuit example in (1a), from Van Geenhoven (1998), as well as the more familiar example of English compounding in (1b):

(1) a. arnajaraq   eqalut-tur-p-u-q
         Arnajaraq.ABS   salmon-eat-IND-[-tr]-3SG
         'Arnajaraq ate salmon.'
     b. Mary went apple-picking.

The thematic object in (1a) occurs inside the verbal complex and this affects transitivity. The verb has intransitive marking and the subject has absolutive case instead of the expected ergative. The nominal itself is reduced to a bare stem. There is no determiner, case marking, number marking or modification. In other words, the incorporated nominal is an N^0, not an NP or a DP.[1] Similar comments apply to the English compound in (1b), though it should be noted that English does not have [$_V$ N+V] compounds. While the reasons for this are not particularly well-understood at this time, I introduce English compounds here for expository purposes.

A somewhat less obvious case of noun incorporation is attested in Niuean, discussed by Massam (2001). Niuean is an SVO language with obligatory V fronting. Massam notes that in addition to the expected VSO order, there also exist sentences with VOS order in Niuean:

(2) ne inu *kofe kono* a   Mele
     PST drink coffee bitter ABS Mele
     'Mary drank bitter coffee.'

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[1]Inuit incorporated nominals are compatible with external modifiers which can be accompanied by (a limited set of) determiners, case marking, etc. This is known as the phenomenon of 'doubling'.

There are restrictions on the shape of the object nominal in VOS structures. They do allow modification, as we can see above, but they do not allow the full range of elements that occur inside noun phrases. There can be no determiners, case marking, relative clause modification or number marking, for example. According to Massam, this distributional fact can be explained by positing a pseudo-incorporation structure [$_{V'}$ V NP]. V$'$ fronting would then derive the VOS order and the restrictions on the nominals that occur in this position would follow from their being NPs, rather than DPs.

So much for syntactic and morphological cues. Noun incorporation also has some semantic properties that have been noted in the literature. For example, Bittner (1994) shows that Inuit incorporated nominals must take obligatory narrow scope. A sentence like (1a) above cannot be used to refer to a previously mentioned salmon, or a salmon belonging to a previously mentioned set of salmon. Furthermore, when other operators are present in the sentence, the incorporated nominal takes scope under that operator. The example in (3) below, also from Van Geenhoven (1998), shows this effect for negation:[2]

(3)   arnajaraq   aalisaga-si-nngi-l-a-q
      Arnajaraq.ABS fish-buy-NEG-IND-[-tr]-3SG
      'Arnajaraq did not buy any fish.'

Another semantic property of incorporated nominals is their number neutrality. Although there is no plural morphology on the nominal in (1a) above, for example, there is no singularity implicature. There could be one or more salmon eaten. This is also evident in compounding. Number neutrality appears to be a feature of incorporated nominals that holds cross-linguistically.

There is a third property of incorporation which is somewhat more difficult to pin down but is nevertheless significant. Mithun (1984:856) describes incorporation as follows:

"...an intransitive predicate denoting a unitary concept...The compound is...the name of an institutionalized activity or state. The IN loses its individual salience both semantically and syntactically. It no longer refers to a specific entity; instead, it simply narrows the scope of the V."

To cast this idea in a more familiar context, consider the intransitive variant of *eat* given in (4a). As Levin (1993:33) notes, "the verb in this variant is understood to have as object something that qualifies as a typical object of the verb":[3]

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[2]Baker (1996) notes a wider range of possibilities for the interpretation of incorporated nominals in Mohawk. He essentially takes them to be equivalent to non-incorporated nominals. Although it is not possible for me to address this problem fully, most of the Mohawk data seem amenable to the view that the incorporated nominal can be a definite or a narrow scope indefinite. There is no data that clearly establishes the possibility of a wide-scope indefinite reading for the incorporated nominal (see Sect. 3.2 for a diagnostic separating definites and wide scope indefinites).

[3]The example in (4a) obviously does not involve an incorporation structure. My goal in using this example is simply to make the intuition about proto-typicality accessible to English speakers by drawing on data and discussion that are familiar. Since English does not have [$_V$ N V] compounds, the attempt to clarify semantic intuitions about incorporation sometimes involves making such compromises. Anticipating the

(4) a. The baby ate. #I think it was a piece of fruit.
    b. The baby ate something. I think it was a piece of fruit.

A final semantic property that has been associated with incorporated nominals is their inability to support pronominal discourse anaphora. The relevant property can be demonstrated by (5a) below, where the nominal inside the compound appears to be in an anaphoric island, in terms of Postal (1969). The anaphora problem can also be illustrated with implicit arguments (5b) and bridging (5c), where accommodation is needed to facilitate the relevant reading:

(5) a. Mary went apple-picking. #They/The apples were delicious.
    b. John baked yesterday. #It/The cake was delicious.
    c. John bought a car. #It/ The steering wheel is black.

The status of this feature in incorporation is controversial, as shown by the debate between Sadock (1980, 1986) and Mithun (1984, 1986). Even though the resistance of incorporated nominals to discourse anaphora is not a reliable test, at least cross-linguistically, this property does appear to be relevant to incorporation to some extent, in at least some languages that have noun incorporation.

We have seen above that NI can be identified directly on the basis of morphological and syntactic evidence or indirectly on the basis of its semantics. This distinction will be particularly relevant as we turn our attention to Hindi in the next section. We will first take a close look at reasons for classifying Hindi as an incorporating language before considering facts that argue against a canonical form of incorporation and in favor of liberal pseudo-incorporation for Hindi.

3 The case for incorporation in Hindi

In this section I will draw on known as well as novel data to highlight those aspects of Hindi that establish the existence of incorporation in the language. In doing so, I will distinguish incorporated nominals from other weak indefinites, showing that incorporation is a phenomenon in need of a separate account.

3.1 Case marking on direct objects

Mohanan (1995) was the first to explicitly claim that Hindi has incorporation (see also Porterfield and Srivastav 1988; Dayal 1999; Wescoat 2002). In doing so, she drew on

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next point, the problem of discourse anaphora might also be more appropriately demonstrated by referring to examples like the following:

 (i) Mary is in boarding school/prison. The boarding school/the prison/#it is far away.
(ii) Mary is in a boarding school/prison. The boarding school/the prison/it is far away.

As we see, English bare singular noun phrases are allowed as objects of certain prepositions. I do not know, at this point, to what extent such contexts are related to incorporation but they certainly seem to behave similarly with respect to anaphora. I have, however, restricted myself to better-known cases in the text. I refer the reader to Stvan (1998) for more on English bare singulars.

morpho-syntactic as well as semantic evidence. The optionality of accusative case marking on direct objects, for example, argues for incorporation on syntactic as well as semantic grounds. In Hindi, accusative marking is optional on inanimate objects. This is shown in (6a–6b) below.[4] The situation with animate objects is more nuanced. Case marking is obligatory if the object has a determiner (7a) but optional if there is no determiner (7b):[5]

(6) a. anu *har kitaab/har kitaab-ko* paRhegii
     Anu every book every book-ACC read-FUT
     'Anu will read every book.'

  b. anu *kitaab/ kitaab-ko* paRhegii
     Anu book   book-ACC read-FUT
     'Anu will read a book/the book.'

(7) a. anu **har bacca/ har bacce-ko* sambhaaltii   hai
     Anu every child   every child-ACC look-after-IMP be-PRS
     'Anu looks after every child.'

  b. anu *bacca/ bacce-ko* sambhaaltii   hai
     Anu child   child-ACC look-after-IMP be-PRS
     'Anu looks after (one or more) children/the child.'

Under the claim of incorporation this distribution is readily explained. Assuming that DPs cannot be incorporated, a quantified DP would count as a normal complement and be assigned accusative case. In the case of inanimates, of course, one would have to allow accusative case to be optionally null. The practical consequence of this is that we cannot get definitive evidence for incorporation from case marking on inanimates. Animate objects are a better guide to the phenomenon since we know from (7a) that nominals with determiners are obligatorily case marked. Because an animate nominal occurs without case marking only when it has no determiners, we can say with some certainty that non case marked animates represent instances of incorporation.

As noted by Mohanan (1995), the semantics associated with these forms is also telling. Accusative marked direct objects refer to contextually salient/unique entities, that is, they are interpreted as definites. Non case marked objects refer more generally (Butt 1993). In the case of animate objects, for instance, the case marked form in (7b) refers to some particular child while the unmarked form refers to one or more children. Although the nominal is singular, the interpretation is number neutral. This, as we know, is a hallmark of incorporation.

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[4]Although it is possible to have accusative marked inanimate objects, there may be a general preference for leaving them unmarked. There may be some subtle semantic differences though. Roughly speaking, the unmarked nominal in (6b) can be interpreted as definite or indefinite but the marked nominal tends to be interpreted only as definite. There is no discernible difference in meaning in the case of (6a) however.

[5]A limited set of determiners, namely *kai* 'several' or numerals are possible. Impressionistically speaking, they are the set of weak determiners, those amenable to an adjectival analysis. I should also note here that there are speakers who might even accept strong determiners like *har* 'every' or *vo* 'that' (Surendra Gambhir and Ayesha Kidwai, p.c.). This would mean that for them the reliable tests for incorporation in Hindi would be purely semantic in nature. Most people, however, do not accept strong determiners in the absence of accusative marking.

Scope facts further strengthen the claim for incorporation. In (8a) below, where the animate object has no determiner and no case marking, the only possible interpretation is that Anu will not look after any children, a *neg-∃* reading. This is not so in (8b). The overt indefinite form is readily interpreted with the existential taking scope over negation. The case marked bare singular object has a definite reading indicating that there is a particular contextually salient child that Anu will not look after:[6]

(8) a. anu *bacca* nahiiN sambhaalegii
        Anu child   not   look-after-FUT
        'Anu will not look after children.'

     b. anu *ek bacce-ko / bacce-ko* nahiiN sambhaalegii
        Anu one child-ACC child-ACC not   look-after-FUT
        'Anu will not look after a particular child/the child.'

Similar facts hold for (9) below, where there is a quantifier in subject position. In (9a) the women can be assumed to be looking after different children. The version in (9b) with a case marked indefinite can involve narrow or wide scope for the object, the version with the case marked bare singular, only a definite reading:

(9) a. har   aurat *bacca* sambhaal rahii   thii
        every woman child look-after PROG be-PST
        'Every woman was looking after a child/children.'

     b. har   aurat *ek bacce-ko / bacce-ko* sambhaal rahii   thii
        every woman one child-ACC child-ACC look-after PROG be-PST
        'Every woman was looking after a particular child/the child.'

Although obligatory narrow scope appears to be a stable cross-linguistic property of incorporation, it is also a stable cross-linguistic property of bare nominals in general. Before looking for further evidence of incorporation in Hindi, therefore, it might be worthwhile to discuss the phenomenon of bare nominals and the relationship between them and incorporation.

3.2 Bare nominals and (in)definiteness

Here I will present evidence to show that incorporated nominals are distinct from weak indefinites. In particular, I will demonstrate that their existential force could not come from the same source, contra claims in Van Geenhoven (1998). Before presenting specific arguments for this claim, I will draw on Dayal (2004) for some background assumptions about Hindi bare nominals. Like English bare plurals, Hindi bare plurals can be used with kind level as well as object level predicates:

(10) a. *kutte* yehaaN aam   haiN
          dogs here   common be-PRS
          'Dogs are common here.'

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[6]I use the terms 'bare nominal', 'bare singular', and 'bare plural' in the sense of Carlson (1977) to refer to noun phrases with no overt determiner. It will be specified whether such nominals are or are not case marked if it is relevant to the discussion.

    b.   *kutte* bahut bhauNkte haiN
        dogs lot   bark-IMP be-PRS
        'The dogs/Dogs bark a lot.'

It was noted as early as Verma (1966) and Gambhir (1981) that Hindi bare nominals can be used as definites or indefinites, a claim that has intuitive appeal since Hindi does not have definite or indefinite articles. The definite use of bare plurals can be demonstrated by examining (10b), which can be read as a generic statement about the properties of the species or a habitual statement about particular entities salient in the discourse. The ability of bare nominals to function as definites is also illustrated by (11a), where the linguistic context brings out its anaphoric use. The indefinite use can be illustrated by (11b):

(11) a.   kuch bacce   andar aaye.   *bacce*   bahut khush the
          some children inside come-PFV children very   happy be-PST
          'Some children came in. The children were very happy.'
     b.   kamre meN *cuuhe* haiN
          room in   mice be-PRS
          'There are mice in the room.'

However, as shown in Dayal (2004), bare nominals cannot be taken to be true indefinites. For one thing, they only allow weak indefinite readings. In (12a) the bare plural takes scope under negation and in (12b) under the intensional verb:

(12) a.   kamre meN *cuuhe* nahiiN haiN
          room in mice   not   be-PRS
          'There aren't mice in the room.'
     b.   mujhe lagtaa hai   ki   kamre meN *cuuhe* ghuum   rahe   haiN
          I-DAT seem be-PRS that room in   mice move-around PROG be-PRS
          'It seems to me that there are mice moving around in the room.'

In the cases above, a definite interpretation is also possible with specific intonation patterns. It is important to keep this reading separate from a wide scope existential reading where the bare nominal picks out a specific entity or group of entities out of a set of like individuals. In other words, the only non-narrow interpretation of 'mice' picks out the maximal set of mice in the context, a definite reading. It cannot denote a subset of the mice in the context, which is what a wide scope indefinite reading would yield.[7] We will not go into the reasons for the absence of a genuine indefinite reading (see Dayal 2004). For present purposes it suffices to say that we can take Hindi bare plurals to be ambiguous between definites and kind denoting terms. We can further assume that the weak indefinite interpretation of Hindi bare plurals can be derived from its kind reading, along the lines of a kind-based analysis of English bare plurals (Carlson 1977; Chierchia 1998; Dayal 2004).

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[7]The contrast at issue can be demonstrated with the following:

 (i) There were five mice in the cage. Some mice were sleeping, some were not.
(ii) There were five mice in the cage. #The mice were sleeping and the mice were not.

Let us turn now to the behavior of Hindi bare singulars. With respect to the properties discussed so far, they behave like bare plurals but further investigation reveals an interesting difference between them. Examples like (13) below suggest that bare singulars can have weak indefinite readings but examples like (14) show that they cannot be considered bona fide indefinites. In (14a) it is not possible to get the bare singular to have a narrow scope indefinite reading.[8] The sentence has only an implausible meaning in which the same child is playing in every place simultaneously. The bare plural in a similar context has a plausible narrow scope indefinite reading:

(13) (lagtaa hai)   kamre meN *cuuhaa* hai
     seem be-PRS room in   mouse be-PRS
     'It seems there's a mouse in the room.'

(14) a. #caroN taraf *baccaa* khel rahaa thaa
        four ways child   play PROG be-PST
        'The same child was playing everywhere.'
    b. caroN taraf *bacce* khel rahe   the
        four   ways children play PROG be-PST
        'Children (different ones) were playing in different places.'

This contrast between bare singulars and plurals can be explained in the following way. We can take the indefinite readings of bare plurals to be kind-based. However, singular kinds are known not to allow object level existential readings easily, which we take to show that singular kind terms do not allow access to their members. Thus the relevant interpretations for sentences like (14) would be the following:

(15) a. $\forall x \, [\text{place}(x) \rightarrow \text{play-in-x}(\iota y[\text{kid}(y)/\text{kids}(y)])]$
    b. $\forall x \, [\text{place}(x) \rightarrow \exists y \, [\text{instantion-of-the-kind-kids} (y) \wedge \text{play-in-x}(y)]]$

Consider the possibility of definite interpretations in (15a), focusing first on the singular case. The *iota* type shift in combination with singular morphology gets us uniqueness and we derive the implausible reading the sentence has.[9] Turning to the plural case in (15a), it is possible to derive the available plausible reading for the sentence by appealing to kind reference, as shown in (15b). Local existential closure is available for the plural kind term, which gives rise to the reading whereby different kids

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[8] The diagnostic used here is from Carlson (1977) where bare plurals were shown to behave differently from indefinites in displaying narrow/differentiated scope:

  (i) Max killed #a rabbit/rabbits for two hours.
 (ii) Max has killed #a cow/cows since the depression.
(iii) Max continued to kill #a fly/flies.

The interesting thing about Hindi bare singulars is that they don't display the relevant narrow scope reading, except in those syntactic contexts where incorporation appears to be an option. This will be demonstrated clearly in Sect. 3.3. See Sect. 6 for more on this.

[9] As discussed in Dayal (2004), *iota* delivers uniqueness but not familiarity in languages where it is not lexically encoded. In (13), for example, the most natural translation into English does not use a definite.

play in different places. As already noted, a similar option is not available for the singular kind term.[10]

To conclude this point, the apparent conflict between (13) and (14) with respect to indefiniteness can be reconciled by taking Hindi bare nominals to be ambiguous between kinds and definites. A universal difference between plural and singular kinds with respect to object level existential interpretations accounts for contrasts between bare singulars and plurals in cases like (14). Hindi definites, however, have to be taken as encoding uniqueness/maximality but not familiarity to account for their so-called indefinite readings, seen in (11–13) (see Dayal 2004 for further discussion of these cases).

We have taken a little detour into the properties of bare nominals in Hindi. In the next subsection we show the relevance of the distinction between bare singulars and bare plurals made here to the discussion of Hindi incorporation.

3.3 The number neutrality test for incorporation

Let us turn, then, to the task of showing that the existential force of Hindi incorporated nominals must come from a different source than the existential force of weak indefinites. Consider the following, where the bare nominal *cuuhaa* 'mouse' is singular:

(16) a. puure din kamre meN *cuuhaa* ghustaa   rahaa
         whole day room in   mouse enter-IMP PROG
         'The whole day the mouse/a mouse (the same one) kept entering the room.'
     b. anu puure din *cuuhaa* pakaRtii   rahii
         Anu whole day mouse   catch-IMP PROG
         'Anu kept catching mice (different ones) the whole day.'

Let us now focus on the readings of the bare singular. The reading we are interested in is one where the denotation of the singular term is not restricted to a unique individual. We see that this plausible reading is available when the bare singular is in object position but not when it is in subject position. Since objects are the canonical targets for incorporation, and number neutrality is a feature of incorporation, we can conclude that the non-unique/number neutral interpretation of Hindi bare singulars is only possible under incorporation.[11]

To make the point in another way, consider the following possibilities:

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[10]Dayal (2004) entertains the possibility of singular kinds also having instantiation sets with number morphology restricting those sets to singletons. For the cases at hand, allowing this option still derives the distinction between singular and plural. The singular version of (15b) would always pick out the same child even with a narrow scope existential because there would only be one member in the set to pick.

[11]There may be a slight simplification here. It is possible to get number neutral interpretations for some subjects, as pointed out by Öztürk (2003). Turning to Hindi, there are people who get an incorporated reading for the following:

(i) puurii raat   mujhe machchaR kaaTtaa rahaa
    whole night I-DAT mosquito   bite-IMP PROG
    'Mosquitoes kept biting me all night.'

These cases are quite limited. See also Farkas and de Swart (2003) for discussion of subject incorporation.

(17) a. $\forall t$ [t $\in$ whole-day $\rightarrow$ $\exists x$ [mouse(x) & enter-the-room-at-t(x)]]

    b. $\forall t$ [t $\in$ whole-day $\rightarrow$ $\exists x$ [mouse(x) & catch-at-t (anu, x)]]

We know that (16a) does not have the logical representation in (17a). I have referred to the explanation given in Dayal (2004) but the point I am making here would go through independently of the particulars of that explanation. Under any theory, bare singulars would have to refer to a single entity rather than different entities picked from a set, given the judgment regarding (16a). When we turn to (16b), however, we see that the bare singular can indeed draw on a plurality of individuals, rather than on a single individual. Why should this be so? The answer to the question, I am suggesting, is that the object bare singular in (16b) can be incorporated because it is in the right syntactic position for incorporation. Number neutrality, we must conclude, is a feature of incorporated nominals, not of Hindi bare singulars in general.

Further evidence for keeping incorporation distinct from other weak indefinites comes from a comparison of objects without case and objects with instrumental case. Consider the examples below. As mentioned earlier, accusative marked objects in Hindi are interpreted as familiar. The example (18) also shows this fact. The sentences in (19), however, have verbs that take an instrumental marked direct object:

(18) anu *laRkii-ko* dekhnaa caahtii   hai

    Anu girl-ACC to-see   want-IMP be-PRS

    'Anu wants to see the girl.'

(19) a. anu *Daktar-se*   baat karnaa caahtii   hai

       Anu doctor-INSTR talk to-do   want-IMP be-PRS

       'Anu wants to talk to the/a doctor.'

    b. anu *Daktar-se*   shaadi   karnaa caahtii   hai

       Anu doctor-INSTR marriage to-do   want-IMP be-PRS

       'Anu wants to marry the/a doctor.'

As we can see from the translations, there is no requirement of familiarity imposed by instrumental case. The sentences can be translated into English using the indefinite article. The objects in (19), however, are not number neutral. They carry singularity implicatures, just like bare singulars in subject position. To see this, consider the following sentences. The verbs here are not intensional and the direct object refers to a contextually salient unique individual:

(20) a. pradhaan mantrii *vidyarthii-se*   miliiN

       prime   minister student-INSTR meet-PFV

       'The prime minister met with the student.'

    b. anu puure din *Daktar-se*   baat kartii   rahii

       Anu whole day doctor-INSTR talk do-IMP PROG

       'Anu kept talking to the (same) doctor the whole day.'

The observed difference between accusative and instrumental case marking with respect to definiteness can be accounted for if we flesh out the intuition that case markers carry semantic content. The accusative case, we can say, following Enç (1991) and Butt (1993), imposes a familiarity requirement on its argument. It must be included in the set of familiar entities, for example. The bare singular in (18), as we

have argued, can pick out the unique individual in the context, who is a girl. This individual must be included in the set denoted by accusative case, namely the set of entities that are familiar, forcing a definite interpretation that includes both uniqueness and familiarity. Instrumental case, on the other hand, can be considered semantically inert.[12] The bare singular in (19–20) can felicitously combine with instrumental case and denote a unique entity that may or may not be familiar in the discourse, depending on the additional requirements imposed by the verb. This leaves non case marked objects to be explained. In such cases, we lose uniqueness effects. Since non case marked nominals can be incorporated while case marked nominals cannot, we conclude that the absence of an obligatorily singular reading for a bare singular in this position must be due to incorporation. That is, this loss of uniqueness, what we have been calling the number neutral interpretation, is due to incorporation. We will look at the semantics needed to get this effect in the second part of this paper. In the discussion so far, I have attempted to: (i) establish the importance of number neutrality of singular terms as a hallmark of incorporation in Hindi and (ii) show the need for a semantic account of incorporation, independent from a semantics for bare nominals and other weak indefinites.

3.4 (In)animacy, gaps and non-compositionality

A further argument for incorporation in Hindi is that certain claims about the frequency and interpretation of incorporated nominals have resonance in Hindi as well. As noted by Mithun (1984) and others, incorporated inanimates tend to be more common than incorporated animates. This is probably also true of compounding in English and, impressionistically speaking, it seems true of Hindi as well (see the list in Mohanan 1995).

A second property that has been noted is that there are gaps in possible [$_V$ N+V] combinations, one of the reasons for the debate about incorporation being a lexical vs. a syntactic process in early discussions of the topic. Similar idiosyncrasies can be seen in Hindi. Thus the verb *dekhnaa* 'see' can combine with *laRkii* 'girl' but not with *aurat* 'woman'; the noun *baccaa* 'child' can combine with the verb *khilaanaa* 'look-after' but not with *maarnaa* 'beat':

(21) a. laRkii-dekhnaa, laRkii DhuunDhnaa, baccaa-khilaanaa,   baccaa-samhaalnaa
        girl/seeing   girl/finding   child-looking-after child-looking-after
    b.*baccaa-maarnaa, *laRkii-sulaanaa,   *aurat-dekhnaa, *laRkii-khilaanaa
        child-beating   girl-putting-to-sleep woman-seeing   girl-looking-after

Finally, the meanings of incorporated structures are often non-compositional. *laRkii-dekhnaa* 'girl-see', for example, cannot be used to describe a situation in which someone just happens to see some girl while looking out of the window. It refers to the viewing of girls as prospective brides.[13] Similarly, *makkhii-maarnaa* 'fly-kill'

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[12]See also de Hoop (1992) for the distinction between weak and strong case.

[13]It is, of course, entirely possible that *laRkii* 'girl' is used to refer to brides, arguing for more transparency in the incorporated *laRkii-dekhnaa*. However, the meaning of *dekhnaa* 'to see' would still not be fully transparent since [$_V$ NP V] does not refer to the simple act of looking but an activity with a specific purpose.

means wasting time rather than actual physical killing of flies. It should be noted, however, that there seems to be a real range in transparency with respect to the meanings of such combinations. So, *ghaas-kaaTnaa* 'grass-cut' is fully transparent, *laRkii-dekhnaa* 'girl-see' somewhat less so and *makkhii-maarnaa* 'fly-kill' clearly opaque. From what we see in the literature, it is not possible to make any cross-linguistic predictions about the occurrence of such combinations. We can only say that it is a fact about incorporation that there is a tendency towards non-compositionality. I bring it up here simply as corroborating evidence for the claim of incorporation in Hindi.

3.5 Incorporated nominals and discourse anaphora

One final empirical property suggestive of incorporation in Hindi has to do with the inability of incorporated nominals to support discourse anaphora. The following data from Porterfield and Srivastav (1988) and Dayal (1999), respectively, is worth noting. In both cases, a non case marked direct object is not an acceptable antecedent for a pronoun in the next sentence:[14]

(22) a. anu-ne *kitaab$_i$* paRhii.   #vo$_i$ bahut acchii thii
         Anu book read-PFV it very good be-PST
         'Anu book-read (read a book). It was very good.'
    b. anu apne beTe ke-liye *laRkii$_i$* dekh rahii hai
         Anu self's son for girl look PROG be-PRS
         'Anu is girl-looking (looking for prospective brides) for her son.'
    c. vo #us-kaa$_i$ swabhaav jaannaa caahtii hai
         she she-GEN nature to-know want-IMP be-PRS
         'She wants to know #her (i.e. the girl's) temperament.'

We know, of course, that the status of discourse anaphora in incorporation is quite controversial and we will see later that the facts of Hindi are not as straightforward as the examples in (22) might lead us to believe. For now, we can simply take them as one more piece of evidence, that is, at least suggestive of incorporation in Hindi.

    To conclude this section, we have seen several reasons to treat Hindi as having noun incorporation. We will now turn to reasons for classifying Hindi as a liberal pseudo-incorporation language rather than a canonical incorporation language.

4 The case for pseudo-incorporation in Hindi

In further describing the nature of incorporation in Hindi, I will make three points that set Hindi incorporation apart from the more canonical forms of incorporation: One, Hindi incorporation does not lead to a change in valency. Two, the Hindi incorporated nominal is a phrasal rather than a lexical category. Three, the incorporated nominal does not have to occur next to the verb. Empirical justification for these claims is

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[14]*laRkaa-dekhnaa* 'boy-seeing' would be the activity of viewing prospective grooms. I use examples of bride-viewing since masculine agreement on the verb could signal agreement with the unmarked direct object/incorporated nominal or simply default agreement.

presented first. The claims will be related to previous accounts of Hindi incorporation in Sect. 5.

4.1 The incorporated nominal as syntactic complement

We will begin by showing that the incorporated nominal in Hindi behaves like a syntactic complement of the verb. The incorporation structure, therefore, does not involve the shift in valency that was observed in the Inuit example in (1a). As discussed by Mohanan (1995), among others, Hindi is a split ergative language that shows an absolutive agreement pattern with imperfective aspect and an ergative pattern with perfective aspect. In (23) we see that agreement changes with the subject, masculine in (23a) and feminine in (23b). In (24), however, the subject has ergative case. The verb in (24a) agrees with the non case marked object. In (24b), both the subject and the object are case marked and the verb shows default masculine singular agreement:

(23) a. raam   *macchlii* pakaR rahaa   hai
         Ram(MASC) fish(FEM) catch   PROG-MASC-SG be-PRS

     b. siitaa   *macchlii* pakaR rahii   hai
         Sita(FEM) fish(FEM) catch   PROG-FEM-SG be-PRS
         'Ram/Sita is catching fish.'

(24) a. raam-ne/ siitaa-ne (ek) *macchlii* pakaRii
         Ram-ERG Sita-ERG (one) fish(FEM) catch-FEM-SG-PFV
         'Ram/Sita caught a fish.'

     b. raam-ne/ siitaa-ne *macchlii-ko*   pakaRaa
         Ram-ERG Sita-ERG fish-(FEM)ACC catch-MASC-SG-PFV
         'Ram/Sita caught the fish.'

The descriptive generalization about Hindi agreement, then, is that the verb agrees with the highest non case marked argument, if there is one, or has default masculine singular agreement. What is surprising, given what we know about canonical incorporation, is that even incorporated nominals can trigger agreement in Hindi showing that the verb remains transitive.

Of course, we noted in the previous section that case marking is optional in some cases and that bare nominals may or may not be incorporated so one might wonder if the sentences in which a non case marked direct object triggers agreement truly involves incorporation or whether the nominal in these cases is simply a (non-familiar) definite. In order to establish that we are dealing with incorporation, we need to make sure that the nominal in question does not carry uniqueness implications. Consider the following discourse:[15],[16]

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[15]This goes against the claim in Mahajan (1992) that agreeing direct objects are necessarily interpreted as specific. There is a propensity for perfectivity, agreement, and specificity to occur together but it is not a necessity. Let me emphasize that the data reported in (25) is not controversial. I thank Rajesh Bhatt and Anoop Mahajan for discussion and initial judgments. Since then I have confirmed it further with Shambhavi Prasad and Atul Kumar.

[16]Thanks to Elena Bashir for raising this question. As she reminded me, Hook (1979) has noted that there is a contrast in definiteness in cases of optional long-distance agreement of the following kind:

(25) *Speaker A*: lanDan meN tumne kya-kya kiyaa?
      'What all did you do in London?'

      Speaker B: pahle din maiN shahar me ghuumii, duusre din dostoN ke saath
      guzaarii. aakhrii din main bahut thak gayii thii.
      'The first day I spent in the town, the second day I spent with friends. The last
      day I was very tired.'

      puure din maiN-ne (apne kamre meN) *kitaab* paRhii
      'The whole day I read books in my room.'

The context here makes it clear that the act of reading spans over an interval and
there is no particular book in the common ground. The singular object has a number
neutral interpretation, which we have taken to be a determining factor in identifying
incorporation. We can safely conclude, with Mohanan (1995), that the incorporated
nominal in Hindi is syntactically visible and functions like a regular complement as
far as agreement is concerned. In the next subsections we depart from Mohanan's
position on Hindi incorporation.

4.2 Incorporated nominals as NP's

We now turn to evidence establishing that the Hindi incorporated nominal cannot be
an N^0 but must be an NP. That is, we show Hindi incorporation to be like Niuean
in this respect. Consider (26), which has modified nominals, and (27), which has
conjoined nominals in incorporated position:

(26) a. anu sirf *puraanii kitaab* becegii
          Anu only old   book   sell-FUT
          'Anu will only sell old books.'
      b. anu apne beTe ke-liye *bahut sundar*   */paRhii-likhii*
          Anu self's son for   very   beautiful educated
          laRkii DhuunDh rahii   hai
          girl   search   PROG   be-PRS
          'Anu is looking for a very beautiful/educated girl for her son.'

(27) a. anu apne beTe ke-liye *sundar*   *aur paRhii-likhii*
          Anu self's son for   beautiful and educated
          laRkii DhuunDh rahii   hai
          girl   search   PROG   be-PRS
          'Anu is looking for a beautiful and educated girl for her son.'

(i)   anu-ne   kursiyaaN   toRnaa   caahaa
      Anu-ERG   chairs-FEM-PL   to-break-MASC   want-MASC-SG-PFV
(ii) anu-ne   kursiyaaN   toRnii   caahiiN
      Anu-ERG   chairs-FEM-PL   to-break-FEM   wanted-FEM-Pl-PFV
      'Anu wanted to break chairs.'

The version with long-distance agreement in (ii) seems to refer to a specific set of chairs, while the one
with default agreement in (i) suggests a more generic activity. Although I do not have an explanation for
this contrast, the facts are actually a bit more nuanced (see Bhatt 2005 for a recent discussion). Again, the
data reported in the text is not controversial.

  b. anu *kutta aur billi* paaltii hai
    Anu dog and cat breed-IMP be-PRS
    'Anu breeds cats and dogs.'

Of course, there are certain types of modification and conjunction that are not acceptable in incorporation. For example, (26a) cannot have a modifier like *bhaarii* 'heavy'. This is because modification must preserve proto-typicality, and while *old books* can enter into a prototypical relation with *sell*, *heavy books* cannot. Similar constraints would apply to conjunction.

4.3 Hindi incorporation and adjacency

In this subsection we show that Hindi incorporation not only involves NPs, it does not even require strict adjacency between the nominal and the verb. In this respect, it seems to be more permissive than Niuean. Dayal (1999, 2003) discusses two cases in which the nominal and the verb are separated. One is in the context of negation, the other in the context of scrambling. These are illustrated below:[17],[18]

(28) a. anu *bacca* nahiiN samhaalegii
    Anu child not look-after-FUT
    'Anu will not look after children.'   ¬∃ *only*
  b. (baRii hokar)   anu *macchlii* nahiiN becegii
    grown-up after-becoming Anu fish not sell-FUT
    'Anu will not sell fish when she grows up.' ¬∃ *only*

(29) a. [F *kitaab*] anu becegii, [F akhbaar] nahiiN
     book Anu sell-FUT, newspaper not
    'Anu will sell books, not newspapers.'
  b. *kitaab* anu bhii becegii
    book, Anu also sell-FUT
    'Anu will also sell books.'
  c. *kitaab* anu zaroor becegii
    book Anu definitely sell-FUT
    'Anu will definitely sell books.'
  d. *faislaa* ham roz   karte haiN
    decision we everyday, do-IMP be-PRS
    'We make decisions everyday.'

A negation between NP and V is the only way to negate the incorporated reading. That we are indeed dealing with an incorporated reading is particularly clear in (28b), which refers explicitly to a future generic activity. The examples in (29) show that it is possible to get a non-specific, number neutral interpretation even when the bare nominal is moved leftward. This flies in the face of a generalization often

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[17]For present purposes it makes no difference whether we are dealing with scrambling or topicalization in (29). Generally, though, such structures are classified as scrambling since movement need not be to clause initial positions.

[18](29d) is from Gambhir (1981).

mentioned in the literature that non-specific NPs cannot be scrambled (Diesing 1992; de Hoop 1992). As discussed at length in Dayal (2003), this is not quite accurate. There are certain discourse requirements on scrambling that have to be fulfilled, which can typically be fulfilled by definite/specific NPs but special contexts can make it possible for non-specific indefinites to fulfill those requirements as well. Example (29a) shows that contrastive focus on the scrambled incorporated nominal redeems the sentence. The role of contrastive focus in this context has been noted and discussed in the literature. The rest of the data are less familiar and worth taking a moment to understand. In (29b), for example, the particle *bhii* 'also' plays a crucial role. 'Book Anu will also sell' triggers presupposition accommodation of the proposition 'someone other than Anu will book-sell'. If we assume that scrambled nominals must be anchored to an element in prior discourse, the acceptability of the sentence can be explained. In the other sentences too, there are expressions that ensure the satisfaction of anchoring conditions on scrambling of incorporated nominals. To sum up, there is clear evidence showing that the number neutral incorporated reading does not require the incorporated nominal to occur next to the verb. Other things being equal, an incorporated nominal enjoys the same freedom that all arguments do in the language.

5 Comparison with previous work on Hindi incorporation

We have seen clear empirical evidence that although Hindi has incorporation, it is not of the canonical type. In particular, we identified three ways in which Hindi incorporation differs from incorporation in polysynthetic languages like Inuit. One, Hindi incorporation involves a normal transitive structure with a syntactically visible complement. Two, the complement is an NP not an N^0. And three, the incorporated nominal is allowed the same freedom of movement that other arguments in Hindi enjoy. It might be useful, at this point, to relate these claims to previous descriptions of Hindi incorporation. The claim that the Hindi incorporated nominal is a true complement of a transitive sentence was first made in Mohanan (1995). The other two claims, that the incorporated nominal is phrasal and that it does not need to be syntactically adjacent to the verb, however, contradict Mohanan's claims and need further discussion. A detailed survey of Hindi speakers conducted by Wescoat (2002) provides an important reference for this.

Wescoat uses Mohanan's description of Hindi incorporation as his starting point and tests variation across speakers on three counts, the requirement of adjacency between a non case marked direct object and a verb, and modification as well as coordination of such objects. That is, his tests bear on the two features on which the present description of Hindi incorporation differs from Mohanan's. With respect to the first, Wescoat finds a significant split among speakers on the acceptability of separating unmarked objects, plausibly classifiable as targets of incorporation, from verbs. On this basis, he posits a dialect split in Hindi, one in which there is incorporation and one in which there is no incorporation. Modification and co-ordination of unmarked objects, however, are reported to be overwhelmingly accepted by speakers, showing that there is no dialect split with regard to the phrasal vs. lexical category of the incorporated

nominal.[19,20] In fact, he goes to some trouble to establish that modification and co-ordination are fully accepted even by speakers who do not readily allow incorporated nominals to be separated from the verb. Interestingly, Wescoat's findings are anticipated by Mohanan herself who mentions in a footnote that her data are not accepted by all Hindi speakers.[21] Wescoat's survey clarifies the extent to which Mohanan's description may depart from a representative account of the language situation.

One can say, then, that Mohanan argues for a canonical version of incorporation (modulo syntactic visibility of the direct object) in which the incorporated nominal is a lexical category, while Wescoat establishes that Hindi is really a pseudo-incorporating language involving an NP, consistent with the proposal here (see also Dayal 1999, 2003). We are left, then, with the question of whether there really is a split among Hindi speakers on the freedom of such NPs to undergo movement. Though I have not done a survey to match Wescoat's, I believe his results are skewed due to the choice of examples used to test adjacency. Consider his diagnostic sentence:

(30) iilaa bacce   hameshaa khojtii   hai
     Ila   children always   search-IMP be-PRS
     'Ila always searches for children.'

To begin with, I should note that the activity of *bacce khojnaa* 'children searching' is very awkward. It needs some kind of special context like a director looking for children to fill certain roles in order to make it acceptable, and even then, it sounds somewhat unnatural. Furthermore, as discussed in Sect. 4.3, scrambling of weak indefinites without an appropriate discourse context leads to infelicity. It is worth emphasizing that the data in (28–29) is not controversial and is not subject to speaker variation. There is no alternative to (28) for negating an incorporation structure, at least not without adding some additional layer of meaning.[22] Similarly, all the examples in (29) are fully acceptable to speakers that I have presented them to. As

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[19]Wescoat's findings can be summarized in somewhat simplified form in the following way:

	OK	?	?*	*
IN separated from V:	19	61	24	22
Modification of IN(eg. 1):	50	53	14	9
(eg. 2):	51	53	18	4
(eg. 3):	97	21	4	4
Coordination of IN:	61	35	13	5

The numbers represent number of speakers whose judgment of the sentence can be characterized as OK, ?, ?* or *.

[20]Mohanan also adduces phonological evidence in favor of her claim that the incorporated nominal and verb constitute V^0. Wescoat shows that the phonological effects are maintained even when the nominal is modified/coordinated. He also notes that the phonological characteristics are maintained even for speakers who allow incorporated nominals to be separated from the verb. I refer the reader to Wescoat's work for further discussion of this point.

[21]Mohanan does not distinguish between singular or plural forms in her discussion of incorporation, nor does she refer to differences between ordinary indefinites and kind terms with existential readings. It is not clear to what extent this might come into play in an evaluation of her generalizations.

[22]Note that Wescoat does not use negation in testing for dialect split. If negation had been used as a test, the results would have clearly been against a dialect split. It is also worth noting that Mohanan's account

demonstrated briefly at the end of Sect. 4.3, what makes these sentences acceptable is the presence of elements that trigger presupposition accommodation, thereby satisfying the discourse conditions on scrambling. The mystery behind the difference in judgments reported here and in Wescoat's survey is due to the fact that his example sentence does not contain any cues that would facilitate the requisite accommodation. In my opinion, then, Wescoat's conclusion that there is a dialect of Hindi in which the incorporated nominal must be adjacent to the verb is incorrect and I would maintain the claim, without qualification, that Hindi is a liberal pseudo-incorporation language. For the sake of argument, however, let us entertain the possibility that the dialect split claimed by Wescoat was maintained even with a suitably controlled experiment. It would simply imply that in one dialect of Hindi scrambling cannot apply to arguments that are NPs or are incorporated, while in another dialect scrambling does not distinguish between NPs and DPs or between incorporated and non-incorporated arguments. It would not imply that there is incorporation in one dialect of Hindi and not in another. The crucial claim, that the target of Hindi incorporation is a syntactically visible phrasal category, would apply equally to both dialects.

6 The semantics of pseudo-incorporation

In the next three sections, we turn to semantic considerations in the analysis of pseudo-incorporation. Although the semantics of incorporation was not formally analyzed until much later than its syntax, there are now a number of accounts that have been proposed. These include Bittner (1994) and Van Geenhoven (1998) for Inuit, Dayal (1999) for Hindi, Farkas and de Swart (2003) for Hungarian, and Chung and Ladusaw (2003) for Chamorro. Most of these works focus on three properties of incorporation, obligatory narrow scope, number neutral readings of singular or unmarked incorporated nominals, and the ability or inability of incorporated nominals to support discourse anaphora. I too will focus on these properties but I will depart from earlier work in arguing for a greater role for aspectual information in the explanation. In addition, I will also bring into the discussion restrictions on verb-noun combinations, something that has been observed in the literature but not taken up in formal accounts of the phenomenon.

6.1 Number neutrality in Hindi pseudo-incorporation

I have noted that number neutrality of incorporated nominals is a cross-linguistically stable property and that the number neutrality of non case marked bare singular direct objects is a clear diagnostic of incorporation in Hindi. In spite of this, I will argue in this section that incorporated bare singulars in Hindi are not semantically neutral by showing that their neutrality is dependent on aspectual specification. Once I have properly characterized the environments in which neutrality is or is not achieved, I will provide a formal account of the phenomenon.

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makes incorrect predictions about negation. If 'book-not-sell' cannot be analyzed as incorporation, 'book' should take scope over negation, giving us ∃¬. Perhaps there are ways of ensuring that the indefinite takes obligatory narrow scope in her system, but since she has not actually noted the problem, it is hard to anticipate what her account would be.

6.2 Number interpretation with (A)telic predicates

A standard view in the literature is that there is a divide between singular and plural forms with respect to the semantic visibility of number morphology. On the basis of examples like (31a), Dayal (1999) and Farkas and de Swart (2003) reject the possibility of built-in plurality of the type claimed for Inuit incorporation by Bittner (1994):

(31) a. anu apne beTe ke-liye *laRkii/#laRkiyaaN* DhuunDh rahii   hai
        Anu self's son for   girl girls   search   PROG be-PRS
        'Anu is searching for a bride/#brides for her son.'

     b. anu *botal/botaleN* ikaTThaa kartii   hai
        Anu bottle/bottles collect   do-IMP be-PRS
        'Anu collects bottles.'

The conclusion they draw, for Hindi and Hungarian respectively, is that singular morphology in incorporated nominals does not have the same implicatures as plural morphology. The oddness of the plural version of (31a) comes from the fact that the outcome of the search will result in a plurality of brides, an outcome that is at odds with social norms of monogamy. The acceptability of the singular version shows that the singular form is able to refer to an atomic entity, in accordance with social expectations. At the same time, the potential for plurality that singular forms have is reinforced by their ability to function as arguments of collective predicates like 'collect', as shown in (31b).

A conclusion one may reasonably draw from these data is that plural incorporated nominals denote in the plural domain but singular forms may denote in the singular or the plural domain, that is, they can denote in a neutral domain. One way to make this concrete might be to take an articulated structure for nominals, such as [$_{DP}$ *Determiner* [$_{NumP}$ *singular/plural marking* [$_{NP}$ *modifier/conjunction* [N^0]]]], and suggest that incorporated plurals are NumPs, while incorporated singulars can be NumPs or NPs lacking number specification.[23] The idea, then, would be that (31b) has an NP, not a NumP. Because the language does not have overt morphology for singular marking, incorporation of NPs is mistaken for incorporation of NumPs.

In spite of the intuitive plausibility of this view, I am going to argue that incorporation in Hindi always involves NumP, not NP, and number morphology is never semantically inert. The first indication of this comes from the fact that a neutral interpretation is not possible for incorporated singulars in sentences with accomplishment readings. In (32a), for example, there is a clear shift in the interpretation of the nominal, depending on whether the predicate is interpreted as telic or atelic. In the first case, only a single book is assumed to be read, while in the latter, a plurality of books may be at issue. (32b) makes the same point in another way. It has a completive particle that makes the statement unambiguously telic, as witnessed by the unacceptability of the measure adverbial 'for 3 hours'. It clearly disallows a neutral interpretation.[24] Finally, (32c) shows that singular nominals are not acceptable

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[23]I am not sure how plausible it is to have conjunction and modification below number but this is what we would be led to posit.

[24]There is more to the meaning of these particles than just telicity. They clearly have presuppositional requirements since they cannot be used in contexts like the following: *what did Anu do? Anu read*

when telicity and collectivity are combined. Such sensitivity to aspectual specification would be unexpected if neutrality were the result of non-specification for number in the incorporated nominal:

(32) a. anu-ne *tiin ghanTe meN /tiin ghanTe tak* kitaab paRhii
Anu-ERG 3 hours in 3 hours for book read-PFV
'Anu read a book in three hours' = exactly one book [*Accomplishment*]
'Anu read a book for three hours' = one or more books [*Activity*]

   b. anu-ne *tiin ghanTe meN /*tiin ghanTe tak* kitaab paRh *Daalii*
Anu-ERG 3 hours in 3 hours for book read COMPL-PFV
'Anu read a book in three hours' = exactly one book [*Accomplishment*]

   c. anu-ne tiin ghanTe meN **kitaab* ikaTTaa kar lii/
Anu-ERG 3 hours in book collect do COMPL-PFV/
^{OK}*kitaabeN* ikaTThaa kar liiN
books collect do COMPL-PFV
'Anu got done collecting *a book /^{OK}books in three hours.'

Of course, one might wonder whether the telic interpretation even involves an incorporation structure. One might hypothesize that telicity is incompatible with incorporation and all one can conclude from (32) is that the number neutral reading, which only occurs with incorporation, does not manifest itself with telic predicates because incorporation is not possible with such predicates. This is not the case. Using standard diagnostics, we can establish that accomplishment readings are possible for incorporated forms in Hindi, and that incorporated bare singulars yield strictly singular readings in those cases.[25]

Consider the following, which have animate objects. The absence of case marking on an animate object in (33b), as well as the possibility of a semi-opaque reading, establishes that we are dealing with a bona fide case of incorporation, as established in Sect. 3. Finally, proper names without accusative marking are unacceptable, another sign that this is genuine incorporation:

(33) a. anu-ne das minaT meN *laRkii-ko/ anu-ko* cun liyaa
Anu-ERG ten minutes in girl-ACC Anu-ACC choose COMPL-PFV
'Anu chose the girl/Anu in ten minutes.'

   b. anu-ne das minaT meN *laRkii/*anu* cun lii
Anu-ERG ten minutes in girl Anu choose COMPL-PFV
'Anu chose a girl in ten minutes.'

(+*completive*) *the book*. This aspect of the meaning does not seem to bear on the issue of number so I set it aside. Differences, if any, between the two particles *Daal-naa* and *le-naa* also will not affect the point under discussion.

[25] I expect that the skepticism is due to the fact that non-specific indefinites are typically not compatible with telicity while non-specificity is exactly what is expected of incorporated nominals. In the examples given, what seems to be going on is that although there is no specific girl to be chosen, the choosing of a girl, any of the girls, provides the set terminal point. This is how the requirements of telicity and incorporation are satisfied. Thanks to Tamina Stephenson and Gennaro Chierchia (p.c.) for bringing up this point. For those who remain unconvinced by the arguments I give here, further independent evidence. showing that singular incorporated nominals are semantically singular, is presented in Sect. 6.5.

Both the case marked and the non case marked/incorporated versions with the bare nominal are grammatical, but there is a clear difference in meaning that emerges when we consider the following types of situations, where I use familiar names that transparently reflect the gender of the individuals:

(34) a. Candidates = {John, Bill, Harry, Sue}
     b. Candidates = {Jane, Sue, Mary, Celia}

(33a) would be used in a situation like (34a) which has one unique girl among boys, while (33b) would be used in a situation like (34b) where a group of girls are potential candidates. The inference associated with (33a) is the one associated with DP-driven uniqueness: $chose(a, \iota x[girl_{sing}(x)])$. That is, there is exactly one girl and that girl was chosen by Anu. The inference associated with (33b), on the other hand, is an implicature that includes the predicate: $\exists x[girl_{sing}(x) \& chose(a, x)]$. There is exactly one girl who was chosen by Anu. Crucially, it is not the inference that would arise from: $\exists x[girl_{unspecified}(x) \& chose(a, x)]$, namely that exactly one group of girls, of unspecified size, was chosen by Anu.[26]

The semantic visibility of singular number can be further established with other adverbials:

(35) a. anu-ne   dobaara/phir-se *laRkii-ko* cun   liyaa
         Anu-ERG second-time/again girl-ACC choose COMPL-PFV
         'Anu chose the girl a second time/again.'
     b. anu-ne   dobaaraa/phir-se *laRkii* cun   lii
         Anu-ERG second-time/again girl   choose COMPL-PFV
         'Anu chose a girl a second time/again.'

The sentence in (35a) would involve a repetition of the first situation, with the same result, while the sentence in (35b) would involve a repetition of the second situation, with a possibly different result.[27]

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[26] The direct object in the incorporated nominal denotes the result of the action. This is particularly clear in a sentence like *anu-ne nayikaa cun lii/nayikaa-ko cun liyaa* 'Anu heroine(ACC) chose'. Without accusative marking, the person chosen becomes a heroine by virtue of being chosen. With accusative marking, the person chosen is a heroine independent of the act of choosing.

[27] Ashiwini Deo (p.c.) points out (i) and (ii) as potential problems for the generalization that telicity leads to non-neutral readings for the incorporated nominals:

(i) anu-ne   aadhe ghanTe meN roTii banaa Daalii
     Anu-ERG half   hour   in   bread make COMPL-PFV
     'Anu got done making bread in half an hour.'

(ii) anu-ne   ek ghanTe meN sabzii   khariid lii
     Anu-ERG one hour   in   vegetable buy   COMPL-PFV
     'Anu got done buying vegetables in half an hour.'

(iii) mez par sabzii   /roTii /kitaab rakhii thii
     table on vegetable roti   book   kept be-PST
     'A vegetable/ a roti was on the table.'
     'Vegetables/rotis were on the table.'
     'A book/ *books were on the table.'

Finally, the visibility of singular number can be replicated by eliciting judgments for the incorporated sentence in a context where a plurality of entities is at issue. If Anu must choose several girls, to act in a play for example, or if she is a match maker looking for brides for several men, a plural incorporated nominal is needed. The singular is completely unacceptable:[28,29]

(36) anu-ne   #*laRkii* cun   lii   /OK*laRkiyaaN* cun   liiN
     Anu-ERG girl   choose COMPL-PFV   girls   choose COMPL-PFV
     'Anu chose (the) girls (she had to choose).'

To conclude, then, it would appear that rumors of the number neutrality of incorporated singulars are somewhat exaggerated. A careful consideration of the data shows that the incorporated nominal itself is not neutral, but that neutrality arises under atelicity. Since the data are rather intricate, I would like to close by emphasizing two points about the empirical generalization about nominal reference and aspect. One, the singularity we see with singular forms is not a pragmatic effect. The claim that singular forms denote exclusively in the singular domain is substantiated by examples with activities that involve no bias about singularity, *book-reading* (cf. (32a–32b)), activities that have a bias for plurality, *book-collecting* (cf. (32c)), as well as contextually supported plural readings, *girl-choosing* (cf. (36)). And there is further support for this claim to come in Sect. 6.5 based on a comparison of pseudo-incorporation and compounding. The second point to keep in mind is that strict singularity only shows up in sentences which have perfective aspect as well as completive marking. This combination, as we have seen in (32), forces a telic and singular interpretation. The perfective in Hindi, though it is often associated with telicity, can occur with 'for x amount of time' (cf. (32a–b)) and we will see that the completive marker can occur with imperfective aspect (cf. (46)). Number neutral readings for singular forms can surface in these cases.

6.3 Iterativity and number neutrality

We turn now to a discussion of how exactly singular and neutral readings are obtained for an incorporated nominal which denotes in the atomic domain. The account of number and aspect that I want to develop rests on a contrast between bare plurals and

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Although both *roTii* and *sabzii* have plural counterparts, *roTiyaaN* and *sabziyaaN*, they cannot be reliably classified as count nouns since they are also used to refer generically to the class of bread and vegetables. More to the point, these nouns can have number neutral interpretations in subject position, unlike a stable count noun like *kitaab*, which can only have a singular reading (cf. (iii) above).

[28] Judgments were elicited from three native speakers for (36). Judgments were also elicited for examples with inanimate count nouns. The context presented was one in which children are given a summer assignment to read a number of books and write a report on them. In such contexts, a sentence like (i), with the singular, was judged to be unacceptable:

(i) #*anu-ne*   ek hafte meN kitaab paRh Daalii   lekin reporT nahiiN likh sakii
    Anu-ERG one week in book read COMPL-PFV but report not   write can-PFV
    'Anu got done reading the books in just one week, but she could not write the report.'

[29] Note that a quantified or a plural subject, as in (9), would allow for a number neutral reading under a distributive reading of the VP.

indefinite singulars noted by Carlson (1977) (see fn. 8). Although both types of terms can be classified as weak because they can or must take narrow scope with respect to negation and attitude verbs, they differ in their ability to scope under certain aspect-sensitive operators:

(37) a. John ate {$^\#$a sandwich / $^\#$some sandwiches / ^{OK}sandwiches} for three days.

    b. John killed {$^\#$a rabbit / $^\#$some rabbits / ^{OK}rabbits} for three days.

The regular indefinites in these examples are unable to take scope under the measure adverbial, leading to implausibility if the specified duration is too long for the activity to be performed on a single atomic or plural entity.[30] Carlson's account of the phenomenon was to appeal to properties differentiating bare plurals and regular indefinites. Bare plurals being names of kinds denote type <e> and can be direct arguments of a predicate while indefinites being generalized quantifiers bind the direct argument position of the predicate. The measure adverbial takes scope between the verb and the direct object, forcing the existential quantifier denoted by regular indefinites to take scope over it. As mentioned in Sect. 3, the existential reading of bare plurals comes about as a late sort-adjustment operation, resulting in this case, in the existential taking narrowest scope and having a differentiated scope reading (see Zucchi and White 2001 and Van Geenhoven 2004 for discussion of alternative approaches).

Let us return to Hindi and pursue Carlson's general idea with reference to the following paradigm, representative of the generalization we are trying to capture:

(38) a.   puure din kamre meN *cuuhaa* ghustaa   rahaa
        whole day room in   mouse enter-IMP PROG
        'The whole day the mouse/a mouse (the same one) kept entering the room.'

    b.   puure din kamre meN *cuuhe* ghuste   rahe
        whole day room in   mice enter-IMP PROG
        'The whole day (different) mice kept entering the room.'

    c.   anu puure din *cuuhaa* pakaRtii   rahii
        Anu whole day mouse catch-IMP PROG
        'Anu kept catching mice (different ones) the whole day.'

Starting with (38c), the incorporation example which is the primary focus of this paper, I will posit a complementation structure for incorporation which differs only minimally from a regular transitive structure. I claim that it has a NumP which denotes type <e,t> rather than type <e> or <<e,t>,t>, the type of a regular complement.[31] This

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[30]There are some exceptions to this. For example, *John drove a car for many years* does not commit us to his driving the same car, just as *John smoked a pipe for twenty years* does not mean he smoked only one pipe during that period. Rather, they convey the sense that John engaged in a type of activity for a certain period of time. The Hindi situation is different, being generally available to all non case marked direct objects. Thanks to Angelika Kratzer (p.c.) for bringing up these examples. See Zucchi and White (2001) for other cases where indefinite objects take scope under measure adverbials.

[31]I am assuming that regular complements can be DPs if they have determiners or NumPs if they are bare. In either case, they would denote type <e> or <<e,t>,t> either due to the semantics of the determiners or through covert type shifts.

guarantees some of the properties discussed in Sect. 3. If the Hindi verb agrees with the highest non case marked nominal (DP or NumP) verbs in incorporation structures would show the same agreement patterns as in normal transitive structures. And if scrambling is indifferent to the distinction between DP and NumP, an incorporated nominal would be expected to scramble like any other nominal. Its trace would ensure that a scrambled NumP would be interpreted in its base position, just as a scrambled DP is. Finally, if case marking in Hindi only targets argumental types <e> or <<e,t>t>, incorporation would be limited to determiner-less noun phrases. Note that I am not arguing against alternative syntactic analyses for incorporation which may differ more radically from ordinary complementation. The account I develop merely shows that an adequate semantics for incorporation is possible without recourse to such alternatives.[32]

Turning to the semantics, I will take verbs to be predicates of events and an incorporating verb to differ from a regular transitive verb in taking properties, rather than individuals, as its internal argument:[33]

(39) a. $catch_{TV} = \lambda x\, \lambda y\, \lambda e\, [catch(e)\ \&\ Agent(e) = y\ \&\ Theme(e) = x]$

  b. $catch_{INC\text{-}V} = \lambda P\, \lambda y\, \lambda e\, [P\text{-}catch(e)\ \&\ Agent(e) = y]$,
    where $\exists e\, [P\text{-}catch(e)] = 1$ iff $\exists e'\, [catch(e')\ \&\ \exists x[P(x)\ \&\ Theme(e') = x]]$

  c. $catch_{INC\text{-}V} = \lambda P\, \lambda y\, \lambda e\, [catch(e)\ \&\ Agent(e) = y\ \&\ \exists x\, [P(x)\ \&\ Theme(e) = x]]$

(39b) takes the property to be a modifier of the event, yielding in effect a sub-type of the event. This is in keeping with those who have argued that the incorporated nominal does not denote independently but rather forms a unit with the verb to denote a "unitary action". Another option, given in (39c), is one where the property provides the descriptive content of the existentially bound theme argument of the incorporating verb. This is essentially the analysis of incorporating verbs in Van Geenhoven (1998) with two substantive points of difference. One is in the denotation of the incorporated singular nominal, which I am claiming denotes in the atomic domain.[34] The second is that Van Geenhoven conflates existential readings of kind terms and incorporation. As I have shown, the Hindi facts militate against this conflation since only non case marked bare singular direct objects, i.e. those that can plausibly be argued to undergo incorporation, have number neutral readings. All other bare singulars carry strict singular implicatures. In the discussion to follow, I adopt the version in (39b)
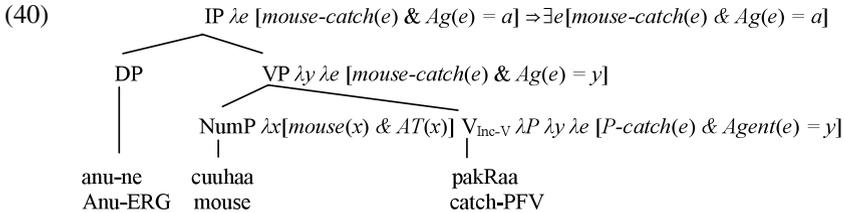
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[32]There are approaches in which distinct positions are posited for strong and weak readings of direct objects (de Hoop 1992, for example). Mahajan (1992) has made a connection between structure, agreement and interpretation: the lower position is for non-specific nominals and does not trigger agreement on the verb, the higher position is for specific nominals and triggers agreement. Recall though that specificity and agreement do not necessarily coincide (cf. (25)). While the present account is compatible with the two-tiered approach to complementation, the explanation for the contrasts we are interested in cannot rest on this structural distinction. This will become clear in the discussion to follow.

[33]I have been focusing primarily on extensional verbs. Suitable adjustments would have to be made for intensional verbs, depending on the particular approach to them that is adopted.

[34]Van Geenhoven, of course, was making a claim for Inuit while I am making a claim for Hindi. Her account of number neutrality may well be right for Inuit. My point is that it cannot be adopted for Hindi.

for incorporation, leaving it for the reader to decide to what extent the explanations would also hold for the version in (39c).

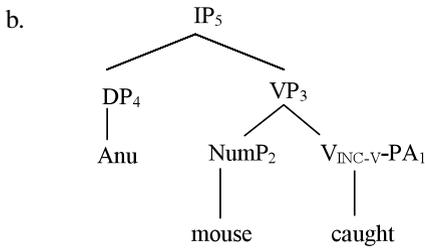To make things concrete, consider (40):

(40)

IP λe [*mouse-catch*(*e*) & *Ag*(*e*) = *a*] $\Rightarrow \exists e$[*mouse-catch*(*e*) & *Ag*(*e*) = *a*]

DP VP $\lambda y \lambda e$ [*mouse-catch*(*e*) & *Ag*(*e*) = *y*]

NumP λx[*mouse*(*x*) & *AT*(*x*)] V$_{\text{Inc-V}}$ $\lambda P \lambda y \lambda e$ [*P-catch*(*e*) & *Agent*(*e*) = *y*]

anu-ne cuuhaa pakRaa
Anu-ERG mouse catch-PFV

The sentence is true if and only if there is an event of mouse-catching with Anu as the agent. An event of mouse-catching entails an event of catching, with a mouse as its theme. Thus the sentence implicates what the corresponding sentence with an existentially bound singular theme argument would, namely that only one mouse was caught.

Turning now to the account of number neutrality, the claim is that one way an incorporated singular NumP can come to have a number neutral reading is through an iterative interpretation of the verb.[35] I will show how this happens, adopting from Lasersohn (1995) the notion of a pluractional operator that takes scope immediately above the verb (see also Cusic 1981; Stump 1981; Zucchi and White 2001; Van Geenhoven 2004). The formula in (41a) defines the pluractional operator for incorporating verbs, which takes a predicate of events and returns a predicate of plural events (using capital E for ease of exposition), each of whose sub-events satisfies the conditions of the original verb. These sub-events are temporally discrete in that their run times do not overlap and between any two sub-events there is a hiatus.[36] I note that Hindi, like English, does not encode the pluractional operator morphologically. In some of the languages discussed by Lasersohn and Van Geenhoven, there is a morphological exponent for pluractionality that surfaces close to the verb. I omit the explicit representation of the hiatus in (41b):

(41) a. $\text{OP}_{\text{PA(pluractional)}} = \lambda V \, \lambda P \, \lambda y \, \lambda E \, [\text{Card}(E) \geq 2$ *Plurality*
   $\& \, \forall e \, \forall e' \in E \, [V(e)(y)(P)$ *Event type*
   $\& \, \neg \tau(e) \circ \tau(e')$ *Non overlap*
   $\& \, \exists t[\text{between}(t, \tau(e), \tau(e')) \, \& \, \neg \exists e'' \, [V(e'')(y)(P) \, \& \, t = \tau(e'')]]]]]$ *Hiatus*

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[35]In the next section I will discuss a second possibility for number neutrality, which is based on a habitual interpretation of the sentence.

[36]Two temporally discrete sub-events that extend say from t to t$'$ and from t$'$ to t$''$ can be one continuous event from t to t$''$. The hiatus between sub-events is crucial to separate these cases from those involving genuine iteration. See Lasersohn (1995) for a fuller discussion of this as well as for the role of pluractionality within the context of event semantics.

b.

```
                    IP₅
                   /    \
              DP₄        VP₃
               |        /    \
              Anu   NumP₂    V_INC-V-PA₁
                      |          |
                    mouse      caught
```

1. $\lambda P \, \lambda y \, \lambda E$ [Card(E) ≥ 2 & $\forall e \, \forall e' \in E$
    $[\lambda P \, \lambda y \, \lambda e$ [P-catch(e) & Ag(e) = y](e)(y)(P) & $\neg\tau(e) \circ \tau(e')]]$
    $\Rightarrow \lambda P \, \lambda y \, \lambda E$ [Card(E) ≥ 2 & $\forall e \, \forall e' \in E$ [P-catch(e) & Ag(e) = y & $\neg\tau(e) \circ$
    $\tau(e')]]$

2. λx[mouse(x) & AT(x)]

3. $\lambda y \, \lambda E$ [Card(E) ≥ 2 & $\forall e \, \forall e' \in E$ [mouse-catch(e) & Ag(e) = y & $\neg\tau(e) \circ$
    $\tau(e')]]$

4. Anu

5. λE [Card(E) ≥ 2 & $\forall e \, \forall e' \in E$ [mouse-catch(e) & Ag(e) = Anu & $\neg\tau(e) \circ \tau(e')]]$
    $\Rightarrow \exists E$ [Card(E) ≥ 2 & $\forall e \, \forall e' \in E$ [mouse-catch(e) & Ag(e) = Anu &
    $\neg\tau(e) \circ \tau(e')]]$

Abstracting away from other aspectual expressions for now and focusing only on the interaction between iteration and nominal expressions, we see how atomicity implicatures are lost once the NumP meaning is lowered into the predicate denotation. (41b), a simplified version of (38c), says that there exists an event E with sub-events of mouse-catching, each of which has Anu as the agent. If there are two such sub-events, it could be that the same mouse is involved in both of them, or, as is more plausible in this case, that different mice are involved. The semantics of incorporation and iteration only requires that there be one instance of the atomic entity per sub-event, leaving it entirely open whether there are one or more entities across the different sub-events. The number neutral reading of the incorporated bare singular, as this demonstrates, does not come from its ability to denote in the plural domain but, rather, from its ability to be part of the iteration.[37] Note that this is possible because the pseudo-incorporation structure does not have an explicit theme argument in its representation.

Let us now see what happens to bare nominals in subject position, examining the readings for singular as well as plural terms in an iterative statement of the form *mouse/mice kept entering* (cf. (38a)&(38b)):

(42) a. $\exists E$ [Card(E) ≥ 2 & $\forall e \, \forall e' \in E$ [enter(e) & Ag(e) = ι(mouse) & $\neg\tau(e) \circ$
    $\tau(e')]]$

b. $\exists E$ [Card(E) ≥ 2 & $\forall e \, \forall e' \in E$ [enter(e) & Ag(e) = $\cap$mice & $\neg\tau(e) \circ \tau(e')]]$
    $\Rightarrow \exists E$ [Card(E) ≥ 2 & $\forall e \, \forall e' \in E$ [enter(e) & $\exists x[^{\cup\cap}$mice(x) & Ag(e) = x] &
    $\neg\tau(e) \circ \tau(e')]$

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[37] I take plurals to include atoms in their domain. As such, each sub-event in the plural counterpart of (41b) may involve one mouse or a number of mice. Note that an incorporated plural term would yield results under iteration that would be hard to separate out from a normal kind-based indefinite reading.

We know from the discussion in Sect. 3.2 that Hindi bare singulars in argument position shift to type <e> through the covert operation of *iota*. The subject term thus denotes the unique mouse in the situation if there is one, or is otherwise undefined. Uniqueness is preserved even when the meaning of the subject is lowered into the verbal complex. The only reading we get is one in which the same mouse is involved in all iterations of entering. This is also true of the bare plural subject, with two differences. The *iota* shifted bare plural will denote the maximal group of mice and it is possible for the individual entries to involve different mice. This would be similar to the situation in English: *the mice kept entering*. More significantly, the bare plural also has the option of shifting to type <e> via *nom*, the plural kind formation operation. A narrow scope existential reading becomes available due to the sort-adjustment generally available to plural kind terms.[38] Recall that the singular kind formation operation differs from *nom* in not allowing similar access to instantiations. This is why a bare plural subject in Hindi can have differentiated scope readings while a bare singular cannot.[39]

For completeness, let us also see how a pluractional operator interacts with the direct object of a non-incorporating transitive verb:

(43) a. anu (puure din) cuuhe-ko pakaRtii rahii
   Anu whole day mouse-Acc catch-IMP PROG
   'Anu kept catching the mouse the whole day.'
   b. $\exists E \; [Card(E) \geq 2 \; \& \; \forall e \; \forall e' \in E \; [catch(e) \; \& \; Ag(e) = a \; \& \; Th(e) = \iota(mouse) \; \& \; \neg \tau(e) \circ \tau(e')]]$

The relevant point here is that case marking applies to a bare nominal which has been shifted to argument type by *iota.* As in the case of the bare singular subject in (42a), we get a fixed scope reading even when it is lowered below a pluractional operator that yields a plurality of sub-events.

In this subsection I have laid out the interaction between the pluractional operator responsible for iterative readings and nominal arguments to show how the number neutral reading of an incorporated nominal can arise as a by-product of iterativity. I now turn to interactions with other aspectual expressions to further flesh out this account of number neutrality.

6.4 Number neutrality and aspect

The predictions for number neutrality of the proposal presented in Sect. 6.3 are straightforward. All higher aspectual expressions that support iterative interpretations will allow for a number neutral interpretation of the pseudo-incorporated singular

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[38]Note that the existential quantifier associated with an indefinite in direct object position would automatically take scope over iteration, in line with Carlson's account for the corresponding contrast in English.

[39]The explanation in terms of a difference between plural kind terms and ordinary indefinites with respect to an aspectual scopal element goes back to Carlson (1977). While he locates the quantification within the meaning of the adverbial itself, Van Geenhoven locates it in the pluractional operator which is associated with the adverbial. The current account is, then, closer to Van Geenhoven's in this respect, but follows Carlson in taking the bare plural to be kind denoting.

term. In addition, an incorporated nominal that is not part of iteration may come to have a number neutral interpretation if a higher aspectual operator induces a quantificational structure. In this section I will go over a few of the cases we have looked at earlier to show that this prediction is borne out. I do not provide anything like a complete account of aspect, or of aspect in Hindi for that matter. There is a rich literature on aspect (see Krifka 1989, 1998, and references cited there) and a substantive recent analysis of aspect in Hindi (Deo 2006) to which I refer the reader. In what follows I leave aside many complexities that have been noted, limiting myself to the bare essentials of aspectual semantics needed to establish the facts for Hindi pseudo-incorporation.

The first and most pressing issue is, of course, the status of incorporation under telicity, as in the example below. Recall that both the singular and the plural are acceptable but with normal number implicatures. In the first case only one girl is chosen while in the second a plurality of girls is chosen:[40]

(44) a. anu-ne   laRkii cun   lii   /laRkiyaaN cun   liiN
      Anu-ERG   girl   choose COMPL-PFV   girls   choose COMPL-PFV
      'Anu chose (the) girl/girls (she had to).'
    b. $\exists e[\text{girl-choose}(e)/\text{girls-choose}(e)$ & $\text{Ag}(e) = \text{anu}$ & $t < \text{now}$ & $\tau(e) \subseteq t]$
    c. $\exists e[\text{girl-choose}(e)/\text{girls-choose}(e)$ & $\text{Ag}(e) = \text{anu}$ & $\exists x[P(x)$ & $Th(e) = x]$
      & $t < \text{now}$ & $\tau(e) \subseteq t]$
    d. $\exists e[\text{choose}(e)$ & $\text{Ag}(e) = \text{anu}$ & $Th(e) = \iota x[\text{girl/girls}(x)]$ & $t < \text{now}$ &
                                               $\tau(e) \subseteq t]$

Let us see how we can account for the observed number implicatures. Telicity, we know, is defined on atomic events and is therefore antithetical to iterativity.[41,42] In the absence of iterativity, the interpretation for (44a) would be as shown in (44b). An event of girl-choosing is true in a situation if an event of choosing with a girl as its theme is true; an event of girls-choosing is true if an event of choosing with some girls as theme is true. Thus the number implicatures come out as we want. I am assuming, of course, that telicity is only defined on events with a set terminal point. The set terminal point in Hindi incorporation structures requires an appropriate theme or path,

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[40] I represent the run time of the event as included within the reference time and interpret tense in standard ways.

[41] Krifka (1989:99) notes in connection with telic statements with mass nouns like *she drank wine in 0.43 seconds* that they "can be explained if one assumes that atomic drinking events are referred to…it is not quantization, but more generally atomicity of the verbal predicate which is required by time-span adverbials."

[42] As in English, there are contexts in which iterativity and telicity seem to combine: *She ran to the store twice in two hours*, *She cooked fish *(twice) in two days*. When this happens in Hindi, number neutrality creeps back into incorporation. (i) can be about reading the same book twice or about reading two different books. It is worth noting, however, that in these cases the adverbial says that the events happened within a period of time, not that it took a period of time for the events to reach the set terminal point:

(i) anu-ne   paanch ghanTe meN do   baar   kitaab paRhii
    anu-ERG five   hours   in   two   times   book   read-PFV
    'Anu book-read twice in five hours.'

just as in normal transitive structures. I submit that though the incorporation structure does not directly provide a theme argument, one can be inferred and may even be represented in the logical form, as shown in (44c). Since we know from (32c) and (36) that contextual priming cannot override the number implicatures of the direct object, the variable P restricting the theme argument must be identified with the property denoted by NumP. The corresponding transitive structure, on the other hand, is interpreted as in (44d). The crucial distinctions, as we can see, are maintained whether we take (44b) or (44c) as the appropriate representation for (44a).[43]

Sentences with perfective morphology in Hindi are interesting because they seem to favor a telic interpretation, but as I have shown in Sect. 6.2 they do not actually rule out an atelic interpretation (cf. (32a)). This means that with respect to iterativity, the perfective is like the progressive in that it is compatible with an iterative or a non-iterative interpretation, allowing for a number neutral reading of an incorporated singular NumP.[44] It may be worthwhile to look briefly at an example with a measure adverbial to see how iterativity plays out:

(45) a. anu-ne   do ghanTee tak kitaab paRhii
       Anu-ERG two hours   for book read-PFV
       'Anu read a book/books for two hours.'
    b. $[\![$for two hours$]\!] = \lambda P\ \lambda e\ [P(e)\ \&\ \tau(e) = \text{2-hours}]$
    c. $\exists e\ [\text{book-read}(e)\ \&\ \text{Ag}(e) = \text{anu}\ \&\ \tau(e) = \text{2-hours}\ \&\ t < \text{now}\ \&\ t \subseteq \tau(e)]$
    d. $\exists E\ [\ \text{Card}(E) \geq 2\ \&\ \forall e\ \forall e' \in E\ [\text{book-read}(e)\ \&\ \text{Ag}(e) = \text{anu}\ \&\ \neg\tau(e) \circ \tau(e')]$
                    $\&\ \tau(E) = \text{2-hours}\ \&\ t < \text{now}\ \&\ t \subseteq \tau(E)]$

The formula in (45c), without pluractionality, gives a continuative reading, specifying that the temporal trace of a single book-reading event extended over a period of two hours. In (45d), which has pluractionality, the plural event extends over a period of two hours. The plural event is itself made up of shorter sub-events of book-reading, each of which may involve the same book or different books.

Note that the universal quantification over sub-events comes from the pluractional operator and not from the measure adverbial, which simply specifies the run time of the event. The adverbial operator, which I take to select for non-quantized event predicates, following Krifka (1989, 1998), Zucchi and White (2001) and Van Geenhoven (2004) among others, is defined in this case. The sum of two book-reading events, even if they involve distinct books, still qualifies as a book-reading event. Since there is no theme argument in the logical representation, the issue of distribution of event participants does not arise.[45]

Let us now look at imperfective morphology, which gives rise to a habitual interpretation. I follow Krifka et al. (1995) in taking habituality to involve a tripartite

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[43]Recall that in the case of the transitive structure the choice is made from a group that includes only one girl, while in the incorporation structure the choice is made from a group of girls.

[44]See Deo (2006) for the claim that the crucial difference between progressive and perfective in Hindi lies in the dimension of extensionality/intensionality.

[45]The sum of two sub-events of reading a book, of course, cannot be a plural event of reading a book, unless both sub-events involve the same book. See Lasersohn (1995) and Van Geenhoven (2004) for relevant discussion regarding the distinction between singular and plural event participants in pluractional contexts.

quantificational structure. I assume that there is a temporal adverbial, overt or covert, which quantifies over a time interval, identifying the reference time of the predicate in its scope with the quantificational unit. Not surprisingly, a telic predicate embedded under an imperfective also allows for a number neutral interpretation. The quantificational structure dilutes the uniqueness that normally accompanies telicity:[46]

(46) a. (un   dino) anu do ghanTe meN kitaab paRh letii   thii
        those days Anu two hours in   book read COMPL-IMP be-PST
        'Those days Anu would book-read in two hours.'
    b. ∀i [[C(i) & in(i, those-days)]→ ∃e [book-read(e) & Ag(e) = anu &
        τ(e) = 2-hours & τ(e) ⊆ i]]

Each contextually relevant unit during the interval denoted by 'those days' requires a single atomic event, with a set terminal point marking the reading of an atomic book. Since there is more than one unit in the interval quantified over, the possibility of more than one book being read is available. The statement suggests a context in which Anu was a particularly fast reader, who was able to finish books in a remarkably short time.

Impressionistically speaking, imperfective morphology appears to be more liberal with respect to number neutral readings than perfective morphology. I present a final example from Hindi to relate these impressions to the approach I have presented. Consider the pair of sentences in (47). The sentence in (47a) has imperfective morphology and both the singular and the plural seem fine. The sentence in (47b) has perfective morphology and the singular seems awkward at best, while the plural is fully acceptable:

(47) a. anu *kutta/kutte* paaltii   hai
        Anu dog/dogs   keep-IMP be-PRS
        'Anu keeps (as pets) dogs.'
    b. anu-ne   do saal tak $^{??}$*kutta paalaa* / *kutte* paale
        Anu-ERG two years for   dog keep-PFV dogs keep-PFV
        'Anu kept (as pets) dogs for two years.'

The question is why the plural forms are fully acceptable in both sentences, read loosely as a description of Anu's disposition or habits over a period of time, while the singular form appears natural only in the first sentence. The sentence in (47b) seems to focus on a particular dog, taking away from the generic feel of the sentence. Interestingly, this recedes if the duration is sufficiently long, for example, if *apni puuri zindagii* 'her whole life' is substituted for *do saal tak* 'for two years' (Rajesh

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[46]This also holds for sentences with non-case marked animate objects which we know to be clear cases of incorporation. The following evokes a context in which Anu is a particularly gifted match-maker who can pick the right bride quickly or an adept casting director who finds the perfect girl for a role in little time:

(i) *anu pandrah minaT   meN laRki cun   letii   hai*
    anu fifteen minutes in   girl choose COMPL-IMP be-PRES
    'Anu girl-chooses in fifteen minutes.'

Bhatt, p.c.).[47] Perfective marking, as we have seen, can allow for a neutral reading of a bare singular under iterativity, but such iterativity is implausible or at least not easily accessible when the time span is short in relation to the predicate. It is a bit of a stretch to imagine having a succession of dogs, one at a time, within a two year period but easy enough if the period spans a longer interval. To sum up, number neutrality with perfective aspect is dependent on the possibility of an iterative interpretation but neutrality is always possible with imperfective aspect, under a habitual interpretation.

Summing up, there are two points that are crucial to my account. One is that telic predicates, as identified by the diagnostic of the adverbial 'in x amount of time', are incompatible with an iterative interpretation. The other is the distinction between iterativity and habituality. Iterativity entails plurality of sub-events and delivers number neutrality of the incorporated nominal directly. Habituality delivers it indirectly. It entails a quantificational structure that presupposes a plural quantificational domain, which in turn delivers number neutrality for the incorporated nominal in its scope. Iterativity is compatible with extensional or intensional contexts, and occurs with progressive, perfective or imperfective morphology. Habituality has an intensional dimension and requires imperfective morphology. Iterativity involves an operator that takes scope at the level of the verb, while habituality takes scope at the clausal level.

To conclude, we have looked at fluctuations between atomic and neutral interpretations of incorporated singulars and seen that seemingly random variations are actually amenable to a systematic analysis if number morphology is taken to be semantically visible in incorporation and the interaction between incorporation and aspect articulated. Apart from accounting for subtle but robust shifts in number neutrality in incorporation, the approach I am advocating resonates better with the fact that incorporated nominals in Hindi are syntactically robust, triggering agreement and undergoing scrambling. That their morpho-syntactic properties should also be relevant to semantic composition fits in with their syntactic status as bona fide complements.

6.5 Number neutrality in Hungarian pseudo-incorporation

The claim that incorporated singulars denote in the atomic domain gets some rather striking confirmation from Hungarian, a language which also has pseudo-incorporation (Farkas and de Swart 2003). Hungarian provides us with a reliable way of identifying incorporation because incorporated nominals precede the verb while normal complements appear post-verbally. Bare singulars are restricted to the pre-verbal position. As expected, Hungarian incorporated singulars appear at first glance to be number neutral. They are compatible with predicates like 'collect' that require a plural argument and they do not give rise to plurality implicatures with predicates like 'seek':[48]

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[47]The effect may also disappear if a phrase like *apne ghar ki surakshaa ke liye* 'for the protection of her house' is added to (47b), thereby taking the focus away from having a particular dog as pet (Ashwini Deo, p.c.).

[48]Farkas and de Swart (2003) take incorporated nominals to be uninstantiated thematic arguments. Instantiation amounts to representation as discourse referents which range over atomic or plural individuals. Incorporated singulars remain number neutral in this account because they do not introduce discourse referents. Plurals presuppose plural discourse referents so even incorporated plurals end up introducing discourse referents, leading to incompatibility with social expectations in examples like (48c).

(48) a. János beteget/ betegeket vizsgált.
Janos patient patients examined
'Janos examined (one or more) patients.'

    b. Mari bélyeget / bélyegeket gyűjt.
Mari stamp-ACC/ stamps-ACC collects
'Mari collects stamps.'

    c. Feri feleséget / #feleségeket keres.
Feri wife-ACC wives-ACC seek
'Feri is looking for a wife/#wives.'

But the illusion of number neutrality is undercut by examples like (49–50). They represent the mirror image of cases like (50c) since they are unacceptable with singular but acceptable with plural incorporated nominals:[49]

(49) a. Donka és én ??példát / OKpéldákat hasonlítunk össze.
Donka and I example.ACC/ examples.ACC compare together
'Donka and I are comparing examples.'

    b. Donka és én *jelöltet/ jelölteket hasonlítunk össze.
Donka and I candidates.ACC candidates.ACC compare together
'Donka and I are comparing candidates.'

(50) a. Ő *országot/ országokat egyesít.[50]
he country/ countries unites
'He unites countries.'

    b. Ő *ellenfelet / ellenfeleket békéltet.
he warring-party/ warring-parties reconciles
'He reconciles warring parties.'

The obvious question here is what separates predicates like 'compare' from predicates like 'collect', such that the former are not acceptable with singular terms, while the latter are. As far as ordinary complementation goes, they are both unacceptable with singular terms and as far as compounding goes, they are both acceptable with forms that, at least on the face of it, are singular. That is, the Hungarian facts are parallel to the familiar English paradigm for compounding and regular complementation:

(51) a. *Bill collects a stamp.
    b. Bill is an avid stamp collector.

(52) a. *OT analyses require comparing a candidate.
    b. OT analyses require candidate comparison.

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[49]I am indebted to József Böröcz, Donka Farkas, Anikó Lipták and Anna Szabolcsi (p.c.) for providing me with the data presented in this section as well as for discussion of key issues pertaining to them.

[50]Anna Szabolcsi has pointed out to me that *országot egyesít* has another meaning that takes a singular and is therefore not an ideal example to establish the point. Apparently, *országegyesítő* 'country-unifier' is an epithet for one of the kings. It means that by unifying territories that were not countries on their own he created a single country. The point about (50a) will go through only if we take it to signal the unification of several pre-existing countries into one, requiring the nominal to denote in the plural domain.

The difference between the two types of predicates, I claim, is that the core process involved in collection does not have a plurality requirement, while the core process involved in comparison does. Collection is compatible with acquiring one atomic item at a time, building up to a plurality of items. Plurality stems from the fact that collection presupposes a plurality of sub-events of acquiring. The core process of comparison, on the other hand, requires a plurality of items to be evaluated simultaneously along some dimension. It is undefined for an atomic entity. The fact that predicates like 'compare' can only incorporate plurals establishes that incorporated singulars do not denote in the plural domain. That is, they are not number neutral.[51]

The claim, then, is that the collective predicates that appear to accept incorporated singulars do so by virtue of aspectual operators that apply to the core process. Compatibility with an adverbial like 'one by one' is telling in this regard:[52]

(53) a. Ma délután *száraz levelet* szedtem össze   a ház körül.
        this afternoon dry   leaf   gathered together the house around
        'This afternoon I gathered dry leaves from around the house.'
    b. Ma délután *száraz leveleket* szedtem össze
        this afternoon dry   leaves   gathered together
        egyesével a ház   körül.
        one-by-one the house around
        'This afternoon I gathered dry leaves one by one from around the house.'

The proposal developed in connection with Hindi can be imported to explain these effects. Consider the representation for (48b), 'Mari stamp collects', and a simplified version of (53a), 'I leaf gathered'. The first involves a habitual interpretation, the second an iterative interpretation, two aspectual dimensions that we identified as sources for number neutrality in Hindi:

(54) a. $\forall i\ [C(i) \rightarrow \exists e\ [\text{stamp-}acquire(e)\ \&\ \text{agent}(e) = m\ \&\ \tau(e) \subseteq i]]$
    b. $\exists E\ [\ \text{card}(E) \geq 2\ \&\ \forall e, e' \in E\ [\text{leaf-}move(e)\ \&\ \text{Ag}(e) = I\ \&\ \neg\tau(e) \circ \tau(e')]\ \&$
        $t < \text{now}\ \&\ t \subseteq \tau(E)]$

Note that I have represented the events as variants of the events typically associated with the lexical verbs *collect* and *gather*, something like *acquire-as-part-of-a-collection* and *move-to-designated-location*. Predicates like 'collect' and 'gather' can be dubbed semi-collective predicates as opposed to pure-collective predicates. The sub-events that make up the event denoted by a semi-collective predicate can be satisfied by atomic entities whereas the sub-events that make up the event denoted by a pure-collective predicate cannot. The sub-events may result in a collection or a gathering but the individual sub-events themselves do not yield a collection or a gathering. They are merely constitutive of collections and gatherings. Semi-collective predicates are those that presuppose a plurality of sub-events rather than a plurality of

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[51]I could not think of any predicates like 'compare' in Hindi that would participate in an incorporation construction. I also leave open the issue of how prevalent such cases of truly collective predicates are in languages with canonical incorporation.

[52]Thanks to Mark Baker for emphasizing to me the significance of this diagnostic. Note, of course, that the adverbial will only work with plural objects.

the theme argument. The claim is that singular nominals will only show up in pseudo-incorporation structures involving semi-collective predicates because these nominals do not require a number neutral argument.[53]

In fact, predicates whose lexical semantics include a requirement of plurality of sub-events of the kind at issue here are well-known in the literature on pluractionality. Lasersohn (1995), following Cusic (1981), makes a distinction between such *repetitive action* verbs and *repeated action* verbs of the kind we discussed in connection with Hindi. A single *nibbling* consists of several small bites that add up to a nibbling, but are not individually so. My claim is that semi-collective predicates have a similar profile. Being transitive, this aspect of their meaning reveals itself in the selection of a singular incorporated nominal, as described above. I refer the reader to the discussion in Lasersohn and Cusic on how the pluractionality operator can be adapted for both *repetitive action* verbs and *repeated action* verbs. I have nothing to add to that discussion beyond broadening its range to include semi-collective transitive predicates like *collect* and *gather*.

To complete this discussion, note that an indefinite direct object will not be acceptable as a complement of a semi-collective predicate because it will take scope outside the pluractionality operator. Finally, it is worth emphasizing that even though a pseudo-incorporated nominal is interpreted low in the syntactic structure, it cannot be conflated with word-level compounding, as shown by the contrasts in (51–52). Whether the differences arise from the fact that nominals inside compounds are truly number neutral or because they do not denote in the individual domain at all and must rely on qualia structures for interpretation, along the lines of Pustejovsky (1991), I leave for future research.

It is clear from the examples we have seen so far, that Hungarian incorporated singulars are no more neutral than Hindi incorporated singulars. For completeness, however, I will list some other cases that may appear to be counter-examples to this claim but, in fact, are not:[54]

(55) a. Mari *ikret* vár.
　　　Mari twin.ACC expect
　　　'Mari is expecting twins.'
　　b. Mari *kutyát* / *gombot* / *tűt* árult a piacon.
　　　Mari dog.ACC/ button.ACC/ needle.ACC sold the market-on
　　　'Mari sold dogs/buttons/needles in the market.'

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[53] If a plurality of sub-events is ruled out in some way, and the verb 'collect' made to have a pure-collective interpretation, the singular term ceases to be acceptable as an incorporated nominal (György Rákosi, p.c.). The same is true for Hindi (cf. (32c)).

[54] There may be some variation in judgments. Anna Szabolcsi does not find (55a) fully acceptable and notes that she could not find any instance of "twin expects" or "twin give-birth-to" on Google. There may also be some cross-linguistic variation in this regard. According to Line Mikkelsen (p.c.), a singular nominal is acceptable in Danish incorporation structures only if the activity typically involves one entity of the relevant kind. Thus 'butcher pig' is acceptable but not 'butcher chicken', which is only good with the plural. These possibilities apparently reflect the fact that in rural households butchering of a single pig is standard, though certainly a plurality could also be butchered, but the butchering of a single chicken is not.

    c. Mari *macesz gombócot* főzött a   levesbe.
         Mari matzo   ball.ACC cook the soup-into
         'Mari cooked matzo balls in the soup.'

    d. Ezen a   hajón *kocsit*   szállítanak.
         this-on the ship-on car.ACC transport
         'This ship transports cars.'

Note that all these sentences do not appear to be telic but the point is that they may have number neutral readings that do not seem to clearly come from iterativity or habituality. I suggest that grammatically, the representation only makes reference to a single individual, but world knowledge or lexical entailment cancels the implicature of strict singularity. The existence of one twin entails the existence of another, successful selling suggests more than one object sold, a good soup is most likely to have more than one matzo ball and we know of special vehicles that transport a number of cars. Crucially, none of the predicates in these examples actually requires a plural theme argument so a nominal that denotes in the atomic domain does not lead to the violation of any principle of grammar. The prediction of the current approach is that if a telic interpretation could be imposed on these statements, the plurality implications would disappear or if they could not, as in the case of (55a), would lead to ungrammaticality.

To conclude our discussion of number neutrality in pseudo-incorporation, I have provided a wide array of evidence from Hindi to establish that incorporated singulars denote in the atomic domain. Due to the fact that they modify the meaning of the predicate itself and their scopal effects are local to the predicate, singular implicatures are obfuscated in iterative and habitual contexts. Their ability to appear as complements only of semi-collective predicates in Hungarian provides supporting evidence, further confirming their status as true singular terms.

7 Anaphora in Hindi pseudo-incorporation

This section deals with the issue of incorporated nominals and discourse anaphora. In the earlier literature, anaphora facts were taken to be crucial in determining whether incorporation was a syntactic or a lexical process (Sadock 1980, 1986; Mithun 1984, 1986). More recently, the anaphora issue became intertwined with the role of number in pseudo-incorporating languages (Dayal 1999; Farkas and de Swart 2003). These accounts, however, do not include a discussion of aspect. Here I will first review the facts in Hindi, elucidating the crucial role of aspect in determining anaphora possibilities. I will then attempt an account of the facts in terms of the analysis of number neutrality given in Sect. 6. I will also comment briefly on the implications of these new findings for the predicate modification approach to pseudo-incorporation.

7.1 Anaphora facts reconsidered

The generalization about anaphora and incorporation proposed for Hindi by Dayal (1999) and for Hungarian by Farkas and de Swart (2003) is that only plural incorporated nominals support anaphora. I repeat the core cases from Sect. 3.5 along with an example illustrating the plural case:

(56) a. anu-ne kitaab$_i$ paRhii.   #vo$_i$ bahut acchii thii
        Anu   book   read-PFV   it   very   good   be-PST
        'Anu book-read (read a book). It was very good.'

    b. anu apne beTe ke-liye laRkii$_i$ / laRkiyaaN$_i$ dekh   rahii   hai
        Anu self's son   for   girl   girls   looking at PROG be-PRS
        'Anu is girl-looking/girls-looking for her son.'

    c. vo #us-kaa$_i$/un-kaa$_i$ swabhaav jaannaa caahtii   hai
        she her   their   nature   to-know want-IMP be-PRS
        'She wants to know #her /their (the girls') temperament.'

Although these data are sound, I would like to modify the generalization slightly. The first modification has to do with examples like (56a) where a pronoun cannot refer back to the incorporated nominal. This fact can be confirmed by further data, as shown below:

(57) *Speaker A*: maiN kal   film   dekne gayii   thii
                    I   yesterday movie to-see go-PFV be-PST
                    'I had gone to see a movie yesterday.'
      Speaker B: #*vo / film /* ∅ kaisii lagii?
                    it   movie pro how   seem-PFV
                    'How did you like it/the movie/[pro]?'

The problem with the generalization, however, is that there may be a general preference for full nominals with inanimate objects. The versions with the pronoun do not, in my view, improve substantially with an overt indefinite *ek kitaab* 'one book' in the case of (56a) or *ek film* 'one film' in the case of (57). Similarly, it seems to me that even with a non-incorporated definite reading of the object in the antecedent sentence, the judgment about pronominal anaphora remains the same.[55] And it persists even if the incorporated nominal is pluralized. Clearly, more work needs to be done on this issue but what this suggests to me is that generalizations about anaphora in Hindi should not be based on incorporated inanimate nominals.

    Clearer confirmation of the discourse opacity of singular incorporated nominals is provided by examples like (56b). Null anaphora is not possible in this case because of the need for possessive morphology. Between the two available options, full nominal anaphora and pronominal anaphora, the judgments are sharp and clear. While the plural version is equally acceptable with pronominal or full nominal anaphora, the singular version only works with the latter.

    The second modification has to do with a more nuanced understanding of the unacceptability of singular pronominal anaphora. To begin with, there are cases in which such anaphora is fully acceptable, as shown by a co-referring singular pronoun in indirect object position in (58b) and in direct object position in (58b′):

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[55] As noted before, the definite reading is available even without accusative marking though, perhaps, certain intonation patterns may better support that reading than others.

(58) a. anu-ne apne beTe ke-liye laRkii$_i$ cun lii
      Anu   self's son for   girl   choose COMPL-PFV
      'Anu has girl-chosen for her son.'

   b. us-ne us$_i$-ko ek sone-kaa cen diyaa hai
      she her   one gold   necklace give-PFV be-PRS
      'She has given her a gold necklace.'

   b'. vo ab us$_i$-se baat kar rahii hai
      she now her-INSTR talk do PROG be-PRS
      'She is now talking to her.'

This new piece of data is significant since it is only minimally different from (56b). The sentence involves perfective aspect and the completive particle *lenaa* that makes the statement unambiguously telic. Recall that it is identifiable as incorporation on the basis of diagnostics regarding absence of accusative marking and somewhat idiomatic meaning. We see that discourse transparency/opacity in incorporation is sensitive not only to plurality but also to aspectual information. We can take this to indicate, once again, the importance of aspectual specification in the semantics of incorporation.

Let us verify our current understanding of the phenomenon with an atelic reading of a perfective sentence:

(59) a. anu-ne do saal tak apne beTe ke-liye laRkii dekhii
      Anu-ERG two year for self's son for   girl   see-PFV

   b. vo hamesha #us-se / laRkii-se ek hii savaal pucchtii thii
      she always   her-Instr girl-INSTR one only question ask-IMP be-PST
      'Anu girl-saw for her son for two years. She always asked the girl the same question.'

The discourse is not readily accepted by native speakers if the pronominal is used in the second sentence. They take it as describing the activity of looking at the same prospective bride repeatedly during the two-year interval, a reading that conflicts with world knowledge about the act of looking at prospective brides. This is not so with a full nominal in the second sentence. It is relatively easy to get the reading where individuals vary with sub-events of bride-viewing. That is, full nominal anaphora is supported by incorporated bare singulars, even under a number-neutral interpretation.[56]

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[56]According to Ashwini Deo (p.c.) there are some number-neutral animate incorporated objects that support singular pronominal anaphora, as in (i). Note that (i) differs minimally from (56b). To me, this reading is possible with the second clause interpreted as providing a reason for the close scrutiny, and/or if an overt connective is added. The account proposed in Sect. 7.2, I believe, is sensitive to such variations:

(i) anu bahut dhyaan-se laRkii$_i$ dekhtii hai.   (kyuNki) vo uskaa$_i$ svabhaav
   Anu very carefully girl   see-IMP be-PRS because she her   temperament
   jaan-naa caahtii   hai
   to know want-Impfv be-PRS
   'Anu girl-sees carefully. (Because) she wants to find out their temperament.'

Ashwini Deo also gives examples like (ii) with singular pronominal anaphora to an inanimate incorporated object:

It is worth noting that Yanovich (2007) gives examples of singular pronominal anaphora for Hungarian pseudo-incorporation (60a), and Asudeh and Mikkelsen (2000) for Danish pseudo-incorporation (60b):[57]

(60) a. A bátyám házat$_i$ vett a múlt héten. Egész vagyont adott érte$_i$.
   'The brother house$_i$ bought last week. He spent a fortune for it$_i$.'
   b. Vita købte hus sidste år. Det ligger i Hals.
   'Vita bought house last year. It lies in Hals.'

This gives some indication that anaphora in pseudo-incorporation may generally show the same kind of sensitivity to aspect that is observed in Hindi. In the next section I turn to an explanation for the anaphora facts of Hindi, keeping in mind that it may also have relevance for other languages with pseudo-incorporation.

7.2 An aspect based account of anaphora in pseudo-incorporation

We can take the situation with animate antecedents as representative of the discourse status of Hindi incorporated nominals and take the data to be explained as given in the following table:[58]

(61)

FORM OF ANAPHOR IN S-2	S-1: TELIC	S-1: ATELIC
SINGULAR: full NP: *laRkii* 'girl'	OK	OK
SINGULAR: pronoun: *vo/us* 'she/her'	OK	*number-neutral marginal/ odd$_{unique}$
PLURAL: full NP: *laRkiyaaN* 'girls'	OK	OK
PLURAL: pronoun: *ve/un* 'they/them'	OK	OK

Let us start with the telic case (cf. (58)): 'Anu girl-chose. She gave her a necklace'. There is no appropriate antecedent for the singular pronoun in the second sentence, the incorporated NumP 'girl' being of type <e,t> and the pronoun being of type <e>. However, anaphora can be established by invoking a function from events to individuals, with 'girl' providing the range of the function, as shown in (62):

(ii) anu-ne do saal tak skool jaate vakt hijaab$_i$ pahnaa
   Anu-Erg two years for school going time hijaab wear-PFV
   lekin vo skool pahuncte hii   us$_i$-ko nikaal detii   thii
   but she school reaching EMPHATIC it-ACC remove COMPL-IMP be-PST
   'Anu wore a/the hijaab to school for two years. But she removed it as soon as she reached school.'

Beyond noting that *hijaab* in this example may be a kind term (as indicated by the possible translation with the definite) and that it does not seem to have a plural counterpart, I am not sure what to make of this example. I include it here for completeness and to underscore the fact that more work still needs to be done on the empirical side to get a full and complete generalization about anaphora in incorporation.

[57]Yanovich highlights the importance of having a singular antecedent for a singular pronoun, appealing to world knowledge rather than aspectual specification in establishing this. Asudeh and Mikkelsen do not take incorporated nominals to support discourse anaphora since they do not find it to hold generally.

[58]Pronouns in Hindi are gender neutral, so in principle, *vo/us* could also be translated as 'he/him' or 'it'.

(62) $\exists e[\text{girl-choose}(e) \ \& \ \text{Ag}(e) = \text{anu} \ \& \ t < \text{now} \ \& \ \tau(e) \subseteq t \ \& \ \exists e' \ [\tau(e) < \tau(e') \ \&$
$\text{give}(e') \ \& \ \exists y \ [\text{necklace}(y) \ \& \ \text{Th}(e')=y \ \& \ \text{Goal}(e') = f_{\text{girl}}(e)]]$

Let us now consider the anaphora possibilities in the case of atelic statements (cf. (59)): 'Anu was girl-seeing. She asked her questions'. Note that the first sentence has an iterative interpretation, as shown in (63a); (63b) and (63c) provide two possibilities for the integration of the second sentence:

(63) a. $\exists E \ [\text{card}(E) \geq 2 \ \& \ \forall e, e' \in E \ [\text{girl-see}(e) \ \& \ \text{Ag}(e) = a \ \& \ \neg\tau(e) \circ \tau(e')]$
$\& \ t < \text{now} \ \& \ \tau(E) = 2 \ \text{years} \ \& \ t \subseteq \tau(E)]$

   b. $\exists E \ [\text{card}(E) \geq 2 \ \& \ \forall e, e' \in E \ [\text{girl-see}(e) \ \& \ \text{Ag}(e) = a \ \& \ \neg\tau(e) \circ \tau(e')]$
$\& \ t < \text{now} \ \& \ \tau(E) = 2 \ \text{years} \ \& \ t \subseteq \tau(E) \ \& \ \exists E' \ [\tau(E') \subseteq \tau(E)$
$\& \ \text{ask-questions}(E') \ \& \ \text{Ag}(E')=\text{anu} \ \& \ \text{Goal}(E')=f_{\text{girl}}(E)]]$

   c. $\exists E \ [\text{card}(E) \geq 2 \ \& \ \forall e, e' \in E \ [\text{girl-see}(e) \ \& \ \text{Ag}(e) = a \ \& \ \neg\tau(e) \circ \tau(e')$
$\& \ e'' \ [\tau(e'') \subseteq \tau(e) \ \& \ \text{ask-questions}(e'') \ \& \ \text{Ag}(e'')=\text{anu}$
$\& \ \text{Goal}(e'')=f_{\text{girl}}(e)] \ \& \ \tau(E) = 2 \ \text{years} \ \& \ t < \text{now} \ \& \ t \subseteq \tau(E)]$

In (63b), the second sentence, which presumably would also denote a plural event, is integrated above the pluractional operator. The only function that can be invoked in this case is a function from the plural event denoted by the first sentence to a girl. This leads to the odd interpretation where the same girl is involved in all the sub-events of girl-seeing/asking. For the discourse to make sense, the second sentence must be integrated below the pluractional operator, as shown in (63c). Here we get functions from sub-events to the girl in that sub-event. This is the reading that seems difficult to obtain. As a descriptive fact, we can conclude that the temporal subordination required for an interpretation in which girls vary with each instance of seeing/asking does not occur with a singular pronoun. We should probably characterize this as a tendency rather than an absolute resistance, keeping in mind the possibility of subtle shifts in judgment (see also fn. 56).

Note that this is not a problem for plural pronouns: 'Anu is girls-seeing. She asks them questions'. The formula in (64b) shows the second sentence being added above the pluractional operator:[59]

(64) a. $\exists E \ [\ \text{card}(E) \geq 2 \ \& \ \forall e, e' \in E \ [\text{girls-see}(e) \ \& \ \text{Ag}(e) = a \ \& \ \neg\tau(e) \circ \tau(e')]$
$\& \ t < \text{now} \ \& \ \tau(E) = 2 \ \text{years} \ \& \ t \subseteq \tau(E)]$

   b. $\exists E \ [\text{card}(E) \geq 2 \ \& \ \forall e, e' \in E \ [\text{girls-see}(e) \ \& \ \text{Ag}(e) = a \ \& \ \neg\tau(e) \circ \tau(e')]$
$\& \ t < \text{now} \ \& \ \tau(E) = 2 \ \text{years} \ \& \ t \subseteq \tau(E) \ \& \ \exists E' \ [\tau(E') \subseteq \tau(E)$
$\& \ \text{ask-questions}(E') \ \& \ \text{Ag}(E')=\text{anu} \ \& \ \text{Goal}(E')=f_{\text{girls}}(E)]]$

We get here a function from the plural event to the plurality of girls seen, which is what is required. Thus, even though temporal subordination is unavailable for both singular and plural pronouns, the difference between them with regard to readings has an explanation.

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[59]Each sub-event of seeing is likely to involve a single girl. As stated earlier, this is not a problem since the denotation of plural terms includes atomic individuals. I assume that pragmatic considerations force the plural event E' to be interpreted iteratively as well. Since the Goal of the plural event is a plurality, distribution into sub-events will not lead to infelicity.

The question that remains to be addressed is why full nominal anaphora does not distinguish between singular and plural forms in the same way. Or to pose the question another way, what is it about full nominal anaphora that makes available temporal subordination of the type shown in (63c)? The suggestion I would like to make is that pronouns, because they lack a temporal index, cannot be temporally subordinated with ease. Common nouns, we know from Enç (1986), do have a temporal index, which allows them to be readily interpreted below pluractionality. This explanation is in line with observations in the literature on subordination that specific grammatical features are crucial in facilitating various types of subordination.[60],[61]

To sum up, I have presented evidence to argue that singular pronominal anaphora is not ruled out in incorporation structures but rather that it is ruled out under a certain interpretation. Singular pronouns cannot be anaphoric to an incorporated nominal which is interpreted as number neutral due to aspectual quantification. I have suggested that this is due to the difficulty of temporal subordination, a difficulty in turn due to the absence of temporal indices on pronouns. This approach also suggests that the impossibility of discourse anaphora for singular pronouns is better characterized as a tendency than a hard fact.

7.3 Theoretical consequences

Anaphora in incorporation has been a much debated topic, one on which there has been disagreement on the facts as well as on what those facts imply. Earlier accounts that looked at anaphora in incorporation took the inability of singular pronouns to refer back to the incorporated nominal in atelic sentences as the core data to be explained. Porterfield and Srivastav (1988), developed further in Dayal (1999), took it as evidence that Hindi incorporated nominals did not introduce discourse referents and argued, in effect, for a predicate modification analysis of the sort that I have adopted here. Farkas and de Swart (2003), whose examples show similar discourse opacity for Hungarian, also propose that incorporated nominals do not introduce discourse referents. They instead treat incorporated nominals as belonging to a class of thematic arguments that are not instantiated. For them, an incorporating verb has two thematic

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[60]For example in *I wish I had a car. I would use it to drive to work* the modal in the second sentence maintains the quantification introduced in the first sentence, enabling subordination and an anaphoric link between *a car* and the pronoun *it*.

[61]Demonstratives, which are built on the same forms as the pronouns, also are unable to have the relevant reading. (56b) or (59) with *us laRkii* 'that girl' in place of *laRkii* 'girl' would still not allow the reading where girls vary with sub-events. Pronouns and full demonstratives are interpretable in the scope of regular quantificational structures:

(i) jabbhii   anu kisi vidyarthii-se   miltii   hai,   vo
    whenever Anu some student-INSTR meet-IMP be-PRS she
    us-(vidyarthii)-se   baat kartii   hai
    that-student-INSTR talk do-IMP be-PRS
    'Whenever Anu meets a student, she talks to him/that student.'

It bears pointing out that here the antecedent is a regular complement with argumental type <e> or <<e,t>,t> while in the incorporation example, it is of type <e,t>. Clearly, more work is needed on this topic.

arguments, only one of which is fully instantiated. An interpretation procedure called *unification* is needed to interpret the other argument. This guarantees existential entailment for the uninstantiated thematic argument but no discourse antecedent for a pronominal element.

The paradigm that these approaches take as their point of reference is given in (65). Pronouns cannot be used to refer back to an antecedent that is not overtly present, as in (65a), nor to an antecedent inside a compound, as in (65b). Full nominal anaphora is needed to satisfy what is known as the Formal Link Condition (Heim 1990; Chierchia 1992; Elbourne 2001; a.o.). (65c) represents a case where a common noun in the antecedent sentence satisfies the condition:[62]

(65) a. I lost ten marbles but I found nine/eight.
{The missing marble(s)/*it/*they} is/are under the sofa.
b. Every donkey owner beats {the donkey(s) he owns/*it/*them}.
c. Every man except John gave his paycheck to his wife. John gave it to his mistress.

Working from this paradigm, the facts of incorporation were taken to argue against an analysis in which the thematic argument was represented, that is against a representation like (66a), and in favor of (66b), at least in the singular case:

(66) a. $\lambda P \lambda y \lambda e [V(e) \& Ag(e)=y \& \exists x [P(x) \& Th(e)=x]]$
b. $\lambda P \lambda y \lambda e[P\text{-}V(e) \& Ag(e) = y]$

One problem with invoking the lack of an antecedent in a structure like (66b) to explain the impossibility of anaphora, however, is that there is ample evidence that the Hindi incorporated nominal is syntactically visible. It seems a little suspicious that an expression that can trigger agreement and undergo syntactic displacement should be invisible for just the Formal Link Condition. In Hungarian too, there is a similar conceptual problem since incorporated nominals in this language are case marked. This, again, suggests a kind of syntactic visibility that belies an explanation in terms of anaphoric islands. The current account, by re-orienting the problem as one of temporal subordination, gets away from these troubling assumptions. At the same time, it reveals that anaphora facts can no longer be used to argue for a predicate modification view of incorporation. The pluractional operator could be expected to have scope over the existentially bound theme argument even under an approach like (66a). A pronoun in a subsequent sentence, if integrated above this operator, would prevent the anaphoric link. The two approaches would, I think, yield the same results. Similar considerations would apply when quantification in the antecedent sentence is due to the habitual operator.

To conclude, the approach to anaphora that I have taken here harks back to an intuition of Mithun (1984) that it is the nature of the pronominal rather than the nature of the incorporated nominal which is behind the resistance to anaphora. I have obviously departed from her in my characterization of this resistance as a tendency

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[62]Note that there is no distinction between singular and plural pronouns in these cases, contrary to what has been observed for pseudo-incorporation.

of a pronoun to look for its antecedent outside the quantificational structures that lead to a number neutral reading of the incorporated nominal. I have adopted the predicate modification account of incorporation in accounting for number neutrality and anaphora, leaving it for the future to determine to what extent the alternative approach is viable.

8 Limited productivity of pseudo-incorporation

The thrust of the discussion so far is that the semantics of pseudo-incorporation is fully predictable on the basis of the denotation of a property denoting nominal and an incorporating verb whose internal argument is a property. In this final section of the paper I would like to take up, albeit briefly, the issue of restrictions and gaps in pseudo-incorporation. This is an aspect of the phenomenon that has been largely ignored in formal accounts of incorporation (but see Asudeh and Mikkelsen 2000). I will not present an explicit analysis of it either, but I want to bring out its implications for the approach that I am advocating.

As mentioned in Sects. 2 and 3.4, pseudo-incorporation is not a fully productive process.[63] For one thing, it appears to be restricted to those [$_V$ NumP V] combinations in which the property denoted by the NumP can be considered, in some sense, a proto-typical theme for the activity denoted by V, that the two together are "the name of an institutionalized activity or state" (Mithun 1984). A contrast in Danish, due to Line Mikkelsen (p.c.), is illustrative. The Danish counterpart of [*butcher pig*] is an acceptable incorporation structure but not [*butcher ostrich*]. Since ostriches are not native to Denmark, the activity of butchering them is clearly not institutionalized. Speakers who would judge a sentence with this incorporation unacceptable, I suggest, would likely not judge the corresponding generic statements in (67a) or (67b) true. To the extent that speakers can construct contexts in which they would judge (67a–67b) true, they would be inclined to accept incorporation as well:[64]

(67) a. Ostrich-butchering is a type of butchering.
     b. Ostriches are often butchered.

While the connection to generics may be intuitively easy to grasp, it is not immediately obvious that the semantics of incorporation should include a generic component. The vast majority of incorporating verbs is extensional and readily lead to existential entailments, modulo aspectual specification of course. I would like to suggest that the generic aspect of its meaning is encoded as a presupposition on the incorporating variant of the transitive verb, leaving its truth conditional component untouched. The presupposition could be a proposition along the lines of (67): *NumP is a type of V*; *P is/are often V'd.*[65] If [$_V$ NumP V] does not represent a canonically recognizable activity, or cannot be coerced to do so, these generic presuppositions will not be satisfied.

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[63]This may also be true for incorporation in general. The discussion here, however, is limited to pseudo-incorporation languages like Hindi, Hungarian and Danish.

[64]Thanks to Ash Asudeh, Line Mikkelsen and Jerry Sadock for helpful discussion on this point.

[65]Also relevant are criteria used in categorization. On this, see Medin and Aguilar (1999) and references cited there as well as discussion about compounding in Dowty (1979).

In such contexts, a statement with an incorporating verb will be infelicitous whereas one with a corresponding transitive verb will be acceptable. For any given incorporating verb, then, only a subset of NumPs that could satisfy the transitive verb's normal selectional restrictions will be able to satisfy the associated presupposition, resulting in restricted productivity.[66] These remarks, obviously, are somewhat speculative at this point and more needs to be done before real claims can be made. I present them here to indicate one way in which the often observed connection between incorporation and genericity can be captured without conflating the two.

In addition to restrictions on pseudo-incorporation, there are also gaps that have been noted as well as a tendency to non-compositional or idiomatic meaning. Nominals with virtually the same meaning may not be equally acceptable as targets for the same incorporating V. In Hindi *laRkii/laRkaa dekhnaa* 'girl/boy see' is acceptable but not *aurat/marad dekhnaa* 'woman/man see' and there is no pseudo-incorporating correlate of the English compound *wife-beating*.[67] And, as already noted, there is a cline with respect to compositionality. These properties are not, in and of themselves, exotic but are typically thought to belong with word-level phenomena. I have been at pains to distinguish pseudo-incorporation from compounding as far as the denotation of the nominal is concerned. This does not mean that pseudo-incorporation cannot show such effects since it crucially involves lexical variants of regular transitive verbs. Standard complementation, pseudo-incorporation and compounding, then, form an interesting triptych that might profitably be studied in comparative terms. This is especially so in current conceptions of grammar where the divide between the lexical and the syntactic has been radically redefined.

Many issues of substance remain to be explored but my goal here was a modest one. I wanted to point out that incorporation has a lexical and a syntactic component. It involves a lexical variant of a normal transitive verb so it is not surprising that it should show properties that are associated with lexical phenomena. At the same time, pseudo-incorporated nominals are distinct from compound nominals as well as from kind denoting terms. The bulk of this paper has been an attempt to make precise this distinctiveness by giving an explicit syntactic and semantic analysis for pseudo-incorporation.

9 Conclusion

In concluding this paper, let me state what I take to be the wider relevance of the claims I have made for Hindi. Obviously, the most direct relevance is for languages

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[66] Pseudo-incorporation would belong in the same class as resultatives, which are also restricted: *wipe the table clean/*streaked* (Dowty 1979). Other structures that carry presuppositions may not show a similar kind of restriction. For example, clefts carry an existential presupposition but are fully productive. This is because there may be contexts in which the presupposition fails, but we can always imagine a context in which that presupposition would be met. It is because the presupposition triggered by pseudo-incorporation is a generic proposition that we get the relevant effect. To accommodate a generic proposition would involve changing assumptions about the way the world is. The example of *ostrich-butchering* is an illustration of this.

[67] So, *biwii-maarnaa is unacceptable. The nominal needs to be marked accusative *biwii-ko maarnaa galat baat hai* 'to beat (one's) wife is wrong', suggesting that a normal transitive structure with a singular kind term is involved. See also fn. 13.

in which incorporation targets phrasal categories and number is morphologically visible such as Hungarian and Danish. No predictions are made for languages in which number is not morphologically expressed or for languages in which incorporation targets lexical categories. However, to the extent that such languages may have similarities with pseudo-incorporating languages, it is expected that conclusions based on Hindi would prove helpful. Throughout the paper, I have tried to make clear the diagnostics used to arrive at empirical generalizations and the theoretical considerations behind specific claims in the hope that this will allow different aspects of the proposal to be evaluated independently.

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