ABSTRACT: A parametric difference between Hindi-Urdu and Dakkhani, the latter allowing a tense-bearing auxiliary to co occur with the epistemic modal, is explicated. It is suggested that the difference is due to a change in Dakkhani in the putatively universal order of functional heads in clause structure postulated by Cinque (1999).

KEYWORDS: Hindi-Urdu, Dakkhani, parametric variation, clausal functional heads, tense, epistemic modal

0. A PARAMETRIC DIFFERENCE

An interesting difference between Hindi-Urdu and Dakkhani, a variant of Hindi-Urdu, is that Dakkhani allows the co occurrence of the tense-bearing auxiliary th- with the epistemic modal hũg- (we shall call this the thii hũgii construction). We try to account for this parametric variation between Hindi-Urdu and Dakkhani in terms of the order of clausal functional heads. Hindi-Urdu conforms to the functional order postulated by Cinque (1999), and (as we shall show) prevents the co occurrence of tense with the epistemic modal. Dakkhani modifies this hierarchy, and allows the thii hũgii construction.

We present a detailed account of the clausal architecture that Hindi-Urdu largely shares with Dakkhani, in particular in the expression of tense and modality, and demonstrate the compatibility of these data with the proposed universal hierarchy of functional projections (Cinque 1999). We then turn to the parametric difference between the two languages. Cinque’s proposal for a universal, hierarchically ordered inventory of

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clausal functional heads provides for parametric variation in terms of the expression or non-expression of a given functional head; but this does not suffice to account for the variation between Hindi-Urdu and Dakhkhani. We propose that there is in Dakhkhani an upward reordering of a future modal head with respect to a Tense head with the value [+Past]. This allows the Dakhkhani *thii hũgii* construction to circumvent the minimality violation that it provokes in Hindi-Urdu.

Roberts and Roussou (2003) claim that grammaticalization is upward reanalysis that gives rise to new functional material. Our proposal, however, is about the reordering of existing functional heads. It draws on the possibilities of syncretism and feature scattering (cf. Giorgi and Pianesi 1997; more recently, cf. the “superset principle” of Starke 2009, implemented as “underassociation” by Ramchand 2008) to suggest not only that the functional hierarchy of clausal heads is changeable, but that the reorganization of this hierarchy may be driven by syncretism and feature scattering.

In sections 1.1 and 1.2 below, we briefly introduce the Cinque hierarchy, and Giorgi and Pianesi’s proposal for feature syncretism. Section 1.3 is an introduction to Dakhkhani. Section 2 is an account of clause structure in Hindi-Urdu and Dakhkhani. We systematically consider the verb forms that occur in the present and past tenses, both “simple” and “compound,” i.e. in combination with aspectually inflected verbs. We show (in sections 2.1-2.2) that Tense is always realized on an “auxiliary,” which may be the verb *be*, or may be null. The lexical verb remains within an Aspect Phrase. In section 2.3 we decompose the future marker into Mood \(_{\text{irrealis}}\) and T(Future), a sequence that conforms to the Cinque hierarchy. Section 2.4 motivates a new generic modal head above T, to account for a construction wherein a V-imperfect plus the past tense auxiliary *th*- yields a generic past (“used to”) reading.

Section 3 introduces the parametric variation. Sections 3.1-3.2 show that the Hindi-Urdu epistemic modal *hoog*- is identical with the future form of the verb *h*- ‘be/happen.’ We assume that T(Future) raises to Mod\(_{\text{epistemic}}\) which in the Cinque hierarchy is the head immediately above T(Past). Modal *hoog*- (thus) cannot co occur with either another future verb form, or with Tense, which intervenes between T(Future) and Mod\(_{\text{epistemic}}\). Section 3.3 introduces the Dakhkhani facts, and section 3.4...
moots the reordering of T(Future) with respect to T(Past) in Dakkhani. Section 3.5 fleshes out the analysis, showing that the generic modal head introduced in Section 2.4 results, in Dakkhani, in a split of T(-Past) and (+Past), as well as a reordering of mood heads with respect to T(+Past). We thus offer an explanation why Dakkhani has a \textit{thii hûgii} construction, but no \textit{he hûgii} construction, where the present tense auxiliary co-occurs with the epistemic modal. Section 4 is the conclusion.

1. BACKGROUND

1.1 Cinque’s (1999) Universal Hierarchy of Functional Heads

Cinque proposes a 32-head structure of functional heads in IP that is invariant in type and order across languages: namely, a series of mood/modal heads, followed by T, followed again by mood/modal heads, and aspect heads. This functional hierarchy (1) is motivated by the order in which adverbs occur in the specifiers of the corresponding functional heads. The claim (Cinque 1999:213) is that “the same, rich, hierarchy of functional projections is present in all languages, and in every sentence of each language, even when no morphological material overtly realizes the corresponding head or specifier.”

1. Mood\textsubscript{Speech Act} Mood\textsubscript{Evaluative} Mood\textsubscript{Evidential} Mood\textsubscript{Epistemic} Mood\textsubscript{Irrealis} Mood\textsubscript{Necessity} Mood\textsubscript{Possibility} Mood\textsubscript{Volitional} Mood\textsubscript{Obligation} Mood\textsubscript{Permission}

T(Past) T(Future) T\textsubscript{Anterior} T\textsubscript{Future}

Asp\textsubscript{Repetitive(I)} Asp\textsubscript{Frequent(I)} Asp\textsubscript{Continuative} Asp\textsubscript{Perfect(?) Asp\textsubscript{Retrospective} Asp\textsubscript{Proximative} Asp\textsubscript{Durative}

Voice Voice Asp\textsubscript{Generic/progressive} Asp\textsubscript{Complete} Asp\textsubscript{Replicative(II)} Asp\textsubscript{Complete(II)}

Voice Asp\textsubscript{Complete(I)} Asp\textsubscript{Complete(II)} Asp\textsubscript{Complete(II)}

The adverbial order is \{\textit{frankly} Mood\textsubscript{Speech Act} \textit{fortunately} Mood\textsubscript{Evaluation} \textit{allegedly} Mood\textsubscript{Evidential} \textit{probably} Mood\textsubscript{Epistemic} \textit{once} T\textsubscript{Past} \textit{then} T\textsubscript{Future} \textit{perhaps} Mood\textsubscript{Irrealis} \textit{necessarily} Mood\textsubscript{Necessity} \textit{possibly} Mood\textsubscript{Possibility} \textit{volitionally} Mood\textsubscript{Volitional} \textit{invariably} Mood\textsubscript{Obligation} \textit{cleverly} Mood\textsubscript{Permission} \textit{usually} Asp\textsubscript{ Habitual} \textit{again} Asp\textsubscript{Repetitive(I)} \textit{often} Asp\textsubscript{Frequent(I)} \textit{quickly} Asp\textsubscript{Celerative(I)} \textit{already} T\textsubscript{Anterior} \textit{no longer} Asp\textsubscript{Terminative} \textit{still} Asp\textsubscript{Proximative} \textit{soon} Asp\textsubscript{Durative} \textit{characteristically} Asp\textsubscript{Generic/progressive} \textit{almost} Asp\textsubscript{Complete} \textit{completely} Asp\textsubscript{Complete(II)}

Asp\textsubscript{Complete(II)}
Each head comes with a marked (=morphologically realized) and an unmarked or default (=morphologically unrealized) value. Thus the simplest of sentences can be taken to contain the entire array of functional projections with default values. A sentence like (2a) would have the same functional structure as (2b), with empty positions that are not lexicalized (Cinque 1999):

2. a. Prices rise  
   b. Prices must not have been being raised

1.2 Giorgi and Pianesi’s Feature Scattering Principle

Giorgi and Pianesi (1997) suggest that in the absence of overt morphological material, the entire hierarchy of functional heads need not be present in all sentences of all languages. Although a language has access to all the ordered maximal projections in UG, it utilizes only those projections needed to host specific lexical or morphological material present in the numeration.

They further suggest that functional features can “syncretize” onto a head: i.e., a set of features can co-occur on a single head. For instance, in the Italian word *bella* ‘beautiful,’ the morpheme –*a* expresses both feminine and singular. In English, third person –*s* indicates number and tense.

However, in principle, each feature can head a projection (cf. their Feature Scattering Principle). Then the upper limit on the number of functional projections is provided by the number of features selected in a lexical array.

1.3 Dakkhani

Dakkhani, a variant of Hindi-Urdu, is the language of the largest linguistic minority in the state of Andhra Pradesh, where Telugu is the language of the majority. The largest number of Dakkhani speakers resides in Hyderabad; among the districts, Kurnool and Guntur have a comparatively larger presence. A Dakkhani speaker is generally a Muslim, but the converse may not be true; some Muslims of Andhra Pradesh acquire Telugu as their first language. A large percentage of Dakkhani speakers are bilingual in Telugu.
Dakkhani is a descendant of the new Indo-Aryan dialects of the Jamuna-Ganges doab of the 13th to 15th centuries (Schmidt 1981). These dialects were imported into the Deccan by Muslim invaders. Dakkhani established itself in the Deccan and was cultivated as a literary vehicle during the 16th and 17th centuries; it was also elevated to the position of an official language. However, with the merging of the Deccan into the Mughal Empire in the latter half of the 17th century, Dakkhani’s position as a literary and official language was undermined, and today it remains merely a spoken dialect. The standard variety of Hindi-Urdu still plays an important role for Dakkhani speakers; it is used in formal settings and for education and literature. Religious congregations are also addressed in the standard variety, seen as the prestige variety by Dakkhani speakers.

Dakkhani shares with Hindi-Urdu its SOV word order and much of its grammatical structure. However, it has undergone subtle changes, some as a result of its contact with Dravidian (see Kachru 1979, 1986; Mustafa 1981, 2000, 2004; Arora 1986, 1989; Subbarao and Arora 1988).

2. TENSE MARKING IN HINDI-URDU AND DAKKHANI

Before we discuss the difference between Hindi-Urdu and Dakkhani of interest in this paper, we illustrate some properties of tense marking common to Hindi-Urdu and Dakkhani. We shall posit a shared clause structure for these languages wherein Tense is always occupied by an “auxiliary” (be, or null). The lexical verb neither raises to T, nor is marked for tense. It raises to an Aspect Phrase complement to the “auxiliary” VP and is marked for aspect (perfect/imperfect/progressive).

2.1 The imperfect and the progressive aspect

Consider the ‘simple present tense’ example (3).2

3. Siima (a name) hās-t-ii (laugh-imperf-3p.sg.f) h-ε (be/happen.pres-3p.sg)

‘Siima laughs’ (lit. Siima laughing is)

2 For clarity and simplicity, all examples are in Hindi-Urdu, and display subject-verb agreement, with the verb marked 3p.sg. fem.
In (3), the auxiliary $h$- carries the tense. $h\epsilon$ is the present singular form of the verb $h$- ‘be, happen’: $h$- is the present tense stem and $-\epsilon$ the morpheme denoting agreement. The lexical verb is $h\epsilon$s, ‘laugh.’ It is inflected for aspect: $-t$ denotes the imperfect aspect. This last fact is seen clearly in (4) below, where the main verb is $aa$ ‘come,’ and the verb $h\epsilon$s- ‘laugh’ is an adverbial adjunct in the imperfect aspect:

4. Siimaa $h\epsilon$s-t-ii $aa$-y-ii
   (a name) laugh-imperf-3p.sg.f come-perf-3p.sg.f
   ‘Siima came laughing’

$h\epsilon$sstii is thus a participial form of the verb that does not carry tense. Therefore in (3) above, we can say that the lexical verb is uninflected for tense; it occurs in an imperfect aspectual form. Thus (3) contrasts with languages like English where tense may be marked on the lexical verb: Siima laughs.

Let us represent the verb complex in (3) as a tree diagram (3’), assuming the surface order to be a result of movement operations, adopting the hypothesis of Kayne (1994). In (3’), TP takes a VP complement (the “auxiliary”), which takes an Aspectual Phrase complement (here, imperfect aspect). The lexical verb is a complement to the Aspect Phrase.

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3 Tense is a syncretic category in Hindi-Urdu. We give below the inflected (tensed) forms of the verb $h$-, ‘be/happen.’ The past tense stem has the suppletive form $th$-.

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<td>2P</td>
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Although (3) literally translates into English as a sentence in the progressive, it does not denote the progressive aspect. The progressive auxiliary in Hindi-Urdu is the verb rah-, which may be glossed as ‘stay, remain;’ cf. (5). Note that the main verb in (5) remains in its bare or stem form. Tense is carried by the auxiliary h-, as before.

5. Siimaa hās rah-ii h-ε
   (a name) laugh stay-3p.sg.f be/happen.pres-3p.sg
   ‘Siima is laughing’

We represent the verbal elements in (5) as (5’), with rah- as the head of Progressive Aspect. Then the difference between (3’) and (5’) is that the head of imperfect aspect is an affixal element -t in (3’), whereas the head of progressive aspect is a free morpheme, the verb rah- in (5’).
In (6), we instantiate the “past progressive” tense. The progressive auxiliary is (as before) rah-, and tense is carried by th-, the past form of h-.

6. Siimaa hās rah-ii th-ii
   (a name) laugh stay-3p.sg.f be/happen.past-3p.sg.f
   ‘Siima was laughing’

Thus we see that the lexical verb does not carry tense. It is a complement to aspect: imperfect aspect in (3), progressive aspect in (5-6).

2.2 The perfect and perfect progressive aspects
Recall that the “simple present” tense in Hindi-Urdu exhibits the verbal sequence V-imperfect + hε (cf. (3)). We might thus expect the corresponding sequence V-perfect + hε to yield a “simple past” reading. But this expectation turns out to be false. Unlike the “simple present” tense, the “simple past” tense in Hindi-Urdu has no overt tense auxiliary:
7. Siimaa hās-ii
   (a name) laugh-3p.sg.f
   ‘Siima laughed’

Indeed, if a perfect verb occurs with an overt tensed auxiliary, the result is a “present perfect” or a “past perfect” interpretation. Example (8) below instantiates the lexical verb hās carrying the perfect aspect (a Ø morpheme). Tense [-past] appears on the auxiliary h-

8. Siimaa hās-Ø-ii h-ε
   (a name) laugh-perf-3p.sg.f be/happen.pres-3p.sg
   ‘Siima has laughed’

In (9), the auxiliary’s tense is [+past], and we obtain a “past perfect” reading.

9. Siimaa hās-Ø-ii th-ii
   (a name) laugh-perf-3p.sg.f be/happen.past-3p.sg.f
   ‘Siima had laughed’

What should be our analysis of the “simple past” example (7) in Hindi-Urdu and Dakhani? Looking at this example in isolation, we might assume that hāsii is a tensed form of the verb hās. It carries (we may say) a Ø tense morpheme “past,” homophonous with the -Ø perfect aspect morpheme in (8-9). Some such analysis is assumed by theories that presuppose that tense is marked on the lexical verb in at least the “simple” tenses.

But we have seen that in the “simple present” tense, the lexical verb in Hindi-Urdu and Dakhani does not raise to tense; it stays within an aspectual projection. Tense has to be carried by an auxiliary h-. I.e. the present tense in Hindi-Urdu is structurally complex, in the manner of tenses that include an aspectual projection. If therefore in (7) the lexical verb were to simply raise to Tense (or have tense marked on it), the verbal structure of the past tense clause would be radically different from that of the present tense clause. Compare the hypothetical structure (7’) with (3’), repeated below as (7’’) for comparison.
We shall assume a consistent clause structure for the present and past tenses in Hindi-Urdu. We host the lexical verb in (7) in a perfect aspect projection with a \(-\emptyset\) perfect aspect morpheme. We also postulate a null auxiliary which raises to [+past] Tense. With this, the structure of the
past tense clause (10) is (10’), and it is parallel to the structure of the present tense clause (3’).

10. Siimaa hãs-Ø-ii Ø
    (a name)    laugh-perf-3p.sg.f aux.past
    ‘Siima laughed’

10’.

We have now made the following claims about the clause structure of Hindi-Urdu and Dakhani:

(i) TP takes a VP complement headed by an “auxiliary” (h- in the present tense, Ø in the past tense), that raises to T.

(ii) The lexical verb raises only to an AspectP complement to the “auxiliary” VP.
2.3 The future

Let us now see how the future is expressed in Hindi-Urdu. Consider (11).

11. Siimaa hãs- ee- g- ii

(a name) laugh-subjunctive-future-3p.sg.f

‘Siima will laugh’

The verb stem hãs is marked with -eeii, where -ii is the familiar feminine singular agreement marker. We suggest that -eeg is also composite: it is bi-morphemic. It consists of a subjunctive morpheme, here -ee, and the future marker -g. The subjunctive morpheme -ee occurs in conditional clauses with 3p.sg. subjects, as a marker of irrealis mood:

12. agar Siimaa hãs-ee to acchhaa hce

if Siima laugh-subjunctive then good be/happen-pres-sg

‘It is good if Siima laughs’

The vowel that precedes the future marker g- actually varies according to the person and number of the agreeing subject: hãs-ũũ- (1p.sg.f/m), hãs-ëë- (1p.pl.), and so on. In every case, this vowel may be identified as the subjunctive morpheme.

We therefore analyze the future marker as consisting of Mood_irrealis and T(Future). The verb raises in (11) as shown in (11’) through Mood_irrealis to T(Future), in accordance with the functional hierarchy of Cinque in (1), wherein T(Future) and Mood_irrealis occur in that order, adjacent to each other:
The structures that we have motivated so far for the present and past tenses and the future are in accordance with the functional hierarchy proposed by Cinque. The part of it relevant to us is (13). In (13), T(Past) has both plus and minus values, (+Past) being the marked value and (-Past) the default value. Aspectual heads occur further down the hierarchy.

13. . . T(Past)>T(Future)>Mood_{irrealis} . . .

In the next section we shall however suggest the need to postulate a new modal head above T.

2.4 A generic past
We have seen that the “present perfect” and “past perfect” consist of a V-perfect occurring with a tensed auxiliary – present tense h-, or past tense th- (cf. section 2.2 , examples (8-9)). Consider now the corresponding occurrences of a V-imperfect with the present or past tense auxiliary.

V-imperfect with the present tense auxiliary h- is of course the “simple present” (example (3) above, repeated below as (14)).
14. Siimaa hās-t-ii h-ɛ
(a name) laugh-imperf-3p.sg.f be/happen-pres.sg
‘Siima laughs’ (lit. Siima laughing is)

V-imperfect with the past tense auxiliary th- yields a generic or habitual (past) modal reading. This is illustrated in (15) below:

15. Siimaa hās-t-ii th-ii
(a name) laugh-imperf-3p.sg.f be/happen.past-3p.sg.f
‘Siima used to laugh’ (lit. Siima laughing was)

This fact (that the past tense marker with an imperfect verb yields a modal interpretation) will be central to our account of the parametric variation between Hindi-Urdu and Dakhani.

To account for (15), we shall assume a null modal head that gives the sentence its generic past reading, by scoping over the event variable of the clause (usually assumed to be located in Tense). Let us see how such a head may be accommodated in the Cinque hierarchy. Since th- is normally located in Tense (being the past tense of h-), the section of the hierarchy relevant to our discussion must be at least as high as T(Past):


The heads available further up in the relevant section of the Cinque hierarchy in (1) are (from left to right) the four Mood heads Speech Act, Evaluative, Evidential and Epistemic. Since none of these can express the generic meaning, let us postulate a new modal head\(^4\) \(\text{Mod}_{\text{generic}}\) immediately above T(Past):

\(^4\) A reviewer suggests that alternatively, the Asp\(_{\text{Habitual}}\) head in the Cinque hierarchy could be relocated above Tense. We leave this question for future research: see n.5 below.
17. \[ \text{Mod}_\text{epistemic} > \text{Mod}_\text{generic} > \text{T(Past)} \ldots \text{Aspect}_\text{Imperf.} \]

This would allow the auxiliaries \( h^- \) and \( th^- \) to raise through \( \text{T(Past)} \) to \( \text{Mod}_\text{generic} \). (This movement has to be made contingent on \( \text{Aspect} \) being imperfect.) This would then give (15), with \( \text{T(+Past)} \), a generic or modal reading. But it would also allow a generic reading for its \( \text{T(-Past)} \) counterpart, i.e. (3), \text{Siimaa hāstii he} ‘Siima laughs.’

The “simple present” in Hindi-Urdu does have a generic or modal reading. In fact, the “simple present” having a generic or modal reading is a well-known phenomenon in the world’s languages. However, one problem with this account (and the structure (17)) is that a generic reading for (15), with \( \text{T(+Past)} \), is obligatory; whereas a generic reading for (3), with \( \text{T(-Past)} \), is optional. We must therefore further assume that an auxiliary in (17) that raises to the marked value \( \text{T(+Past)} \) obligatorily raises to \( \text{Mod}_\text{generic} \), whereas an auxiliary that raises to the default value \( \text{T(-Past)} \) only optionally raises to \( \text{Mod}_\text{generic} \).

Alternatively, a second execution is possible of the covert modal in (15). Suppose the modal is specified as past, \( \text{Mod}_{\text{generic}[+\text{Past}]} \), i.e., it does not encompass the (-Past) value at all. Then \( th^- \) obligatorily raises through \( \text{T(+Past)} \) to \( \text{Mod}_{\text{generic}[+\text{Past}]} \), but \( h^- \) will not raise beyond \( \text{T(-Past)} \). The optional generic reading of the simple present, which is not unique to Hindi-Urdu, must be obtained in some other way. This second execution may seem inelegant; but (anticipating a little) it explains an interesting limitation on the parametric variation between Hindi-Urdu and Dakhhani. The Dakhhani epistemic modal \( hūgii \) co occurs with the [+past] Tense auxiliary \( \text{thii} \). Interestingly, it cannot co occur with the [-past] Tense auxiliary \( hε \). i.e., Dakhhani has a \( \text{thii} hūgii \) construction, but it does not have a \( hε hūgii \) construction. We shall suggest that this limitation on the co occurrence of a tense morpheme with the epistemic modal is anticipated by the fact that in Hindi-Urdu, \( \text{thii} \) may have the syntactic status of a modal, whereas \( hε \) does not.
3. EPISTEMIC MODAL CONSTRUCTIONS IN HINDI-URDU AND DAKKHANI

We now turn to an account of the epistemic modal in these languages.

3.1 The modal *hoog-* in Hindi-Urdu

The Hindi-Urdu modal *hoog-* is an epistemic modal. Epistemic modality is concerned with the speaker’s deductions or opinions; it expresses the speaker’s judgement about the factual status of a proposition.\(^5\) *Hoog-* is the Hindi equivalent of the English modal of probability *must* as in *Mary must be a student* or *Mary must be laughing*. We thus place *hoog-* at the \(\text{Mod}_{\text{epistemic}}\) head in Cinque’s hierarchy (cf. (1)).

The modal *hoog-* is identical with the future form of the verb *h-* ‘be/happen,’ illustrated in (18):

(18) is actually ambiguous between a future and an epistemic modal (“It must be the rain”) reading. We have said that a verb inflected for the future in Hindi-Urdu raises through Mood\(_{\text{irrealis}}\) to T(Future). In order to get the modal reading for *hoog-*\(_{-}\), we assume that the verb further raises to \(\text{Mod}_{\text{epistemic}}\). This is the head in the Cinque hierarchy that is immediately above T(Past).

The modal *hoog-* can co-occur with a verb *h-* in AspectP. In (20i), the modal co-occurs with the imperfect verb; in (20ii), with the perfect verb; and in (20iii), with the verb marked for the progressive.

\(^5\) “Expressions of epistemic modality mark the necessity/possibility of an underlying proposition … relative to some body of evidence/knowledge. The stock examples use the English modal auxiliary verbs: *must* and *might*” (von Fintel & Gillies 2006).
20. (i) baarish ho-t-ii hoo- g-ii
    rain be/happen-imperf-3p.sg.f be/happen-subjunctive-future-3p.sg.f
    ‘It must rain/be raining’

(ii) baarish hu-Ø-ii hoo- g-ii
    rain be/happen-perf-3p.sg.f be/happen-subjunctive-future-3p.sg.f
    ‘It must have rained’

(iii) baarish ho rah-ii hoo- g-ii
    rain be/happen stay-sg.f be/happen-subjunctive-future-3p.sg.f
    ‘It must be raining’

The modal hoog- can also co occur with a ‘light verb’ denoting completive aspect:

21. ab tak baarish ho cuk-ii hoo- g-ii
    now by rain be/happen completive-sg.f be/happen-subjunctive-future-3p.sg.f
    ‘By now, it must have finished raining’

3.2 Restrictions on the occurrence of hoog-
The modal hoog- cannot co occur with a verb marked for the future.

22. *Siimaa hās-ee-g-ii hoo-g-ii
    (a name) laugh-subjunctive-future-3p.sg.f be/happen-future-3p.sg.f
    *Siimaa must will laugh’ (Intended: ‘it must be the case that Siima will laugh’)

An obvious explanation for this is that there is only one future head. Once the verb hās- has moved through Mood_{irrealis} to T(Future), these nodes are unable to host the marker of epistemic modality.
The modal *hoogii* also cannot co-occur with Tense, i.e. the present and past tense auxiliaries *h*- and *th*-, in Hindi-Urdu; these may neither follow nor precede the modal.

23. Siimaa hās-Ø-ii *(*(h-ε) hoo-g-ii *(h-ε)
(a name) laugh-perf-sg.f *(be/happen be/happen.
3p.past.sg.) subjunctive- future-3p.sg.f

*t‘Siima must has laughed’ (Intended: ‘it must be the case that Siima has laughed’)

24. Siimaa hās-Ø-ii *(th-ii) hoo-g-ii *(th-ii)
(a name) laugh-perf-sg.f *(be/happen- be/happen.
3p.past.sg.) subjunctive- -future-3p.sg.f

*t‘Siima must had laughed’ (Intended: ‘it must be the case that Siima had laughed’)

This observation is not surprising; for there is a quite general failure of Tense to co-occur with modals in many languages. Thus it is often assumed that modals are merged under Tense. But let us try to account for the ungrammaticality of (23-24) in terms of Cinque’s hierarchy of functional heads. The section of the hierarchy relevant to us is (25):

25. Mod_{epistemic} T(Past) T(Future) Mood_{irrealis} …

In order to generate (23) or (24),

(i) the tense-bearing auxiliary *h*- or *th*- must merge into (or move to) T(Past).

(ii) the epistemic modal *h*- must raise through Mood_{irrealis} and T(Future), to Mod_{epistemic}.

But this would violate Minimality, as the epistemic modal would have to cross T(Past). I.e. the tense auxiliary *h*- or *th*- would block the movement of *h*- from T(Future) to Mod_{epistemic}.

To put it in more traditional terms, the Head Movement Constraint of Travis (1984) does not allow head-to-head movement to skip an intervening head:
This then seems to be a plausible explanation, assuming Cinque’s hierarchy of universal heads, for ruling out such constructions as (23-24) where T (thii/hε) and Mod_{epistemic} (hoogii) co occur. But such a co occurrence is possible in Dakhani, and this is the parametric variation addressed in this paper.

3.3 The thii hûgii construction in Dakhani

Our observations above about the properties of the Hindi-Urdu epistemic modal hoogii carry over to its Dakhani counterpart hûgii, with just one difference. In Dakhani, the epistemic modal co occurs with the
Tense (+Past) auxiliary. We need to generate sentences such as (26), (27) and (28) in Dakhkhani. We shall say that they all instantiate the \textit{thii hũgii} construction.

26. Siimaa ĕs-Ø-ii th-ii hũ-\textit{g-ii}  
(a name) laugh-perf-3sg.f be.past-3p.sg.f be/happen. subjunctive-future-3p.sg.f  

‘It must be the case that Siima had laughed’

27. Siimaa ĕs rah-ii th-ii hũ-\textit{g-ii}  
(a name) laugh prog-3sg.f be.past-3p.sg.f be/happen. subjunctive-future-3p.sg.f  

‘It must be the case that Siima was laughing’

28. Siimaa ĕs-t-ii th-ii hũ-\textit{g-ii}  
(a name) laugh-imperf-3sg.f be.past-3p.sg.f be/happen. subjunctive-future-3p.sg.f  

‘It must be the case that Siima used to laugh’

Notice that the past tense auxiliary co-occurs with the epistemic modal not only in (28), where it is a modal, but also when it forms the “past perfect” and the “past continuous” tenses. The question is how the minimality violation that we invoked to explain the complementarity of tense and the epistemic modal in Hindi-Urdu is circumvented in Dakhkhani.

Note first that the existing scope for parametric variation in clausal functional heads will not suffice to account for this difference between Dakhkhani and Hindi-Urdu. All clause-level functional projections are assumed to be present in all languages, and moreover, \textit{in the same order}. The site of variation is restricted to the lexicalization, or the failure to lexicalize, of any functional head. Now the same tense heads, and the epistemic modal head, are capable of lexicalizing in Dakhkhani and Hindi-Urdu. Indeed, these morphemes are all almost identical in the two languages.
Our proposal is that the order of the relevant functional projections must differ in some way, such that the minimality violation observed in Hindi-Urdu does not obtain in Dakkhani. We shall first present our proposal as a re-ordering of the current Cinque hierarchy. Subsequently, we shall motivate this re-ordering as a consequence of the newly postulated head $Mod_{generic}[+Past]$. 

3.4 A suggested reordering: a first account

The minimality violation in Hindi-Urdu (we may recall) is due primarily to $T(Past)$ intervening between $Mod_{epistemic}$ and $T(Future) Mood_{irrealis}$, seen in (25), repeated as (29) below.

29. (=25). $Mod_{epistemic} T(Past) T(Future) Mood_{irrealis} \ldots$

We said that the epistemic modal, starting from irrealis Mood and moving through the Future head, could not move past the Tense head into epistemic Mood, if the Tense head was filled. If the order of functional heads were as in (30), where $T(Future)$ and $Mood_{irrealis}$ have moved to a position above $T(Past)$, Tense could co-occur with the epistemic modal with no violation of minimality. The tense auxiliary $h$- or $th$- could merge or move into $T(Past)$, and the epistemic modal $h$- raise through $Mood_{irrealis}$ and $T(Future)$ to $Mod_{epistemic}$. 

30. $Mod_{epistemic} T(Future) Mood_{irrealis} T(Past) \ldots$

We suggest that the change from (29) to (30) represents the upward shift of a single functional head, rather than of a sequence of two heads. The “future marker,” which we decomposed into $Mood_{irrealis}$ and $T(Future)$, has traditionally been perceived as a single morpheme. Morphologically, the section of the hierarchy $(T(Future) Mood_{irrealis})$ may be a single projection. In the variant of the universal functional projections hypothesis proposed by Giorgi and Pianesi, morphological syncretism is reflected in the functional structure, such that although each feature can potentially head a projection, it need not always do so. Then, if $Mood_{irrealis}$ and $T(Future)$ coalesce into a syncretic head, we can simply say: $T(Future)$ has moved above $T(Past)$ in Dakkhani.
What might be the intuitive logic of such a functional reorganization? Recall that the future is not a “tense;” in many languages, including English and Malayalam (Hany Babu 1996), it is analyzed as a modal. While we have not demonstrated this for Hindi-Urdu, the future in this language indeed incorporates modality in its morphology (viz., Mood\_ unrealis), on our analysis. If (thus) T(Future) is actually a Mood head, the effect of the Dakkhani reorganization is for the mood heads that are interrupted by T(Past) in the Hindi-Urdu sequence (29), to come together.

Parametric variation thus may be

(i) a result of a re ordering of adjacent functional heads, with the upward movement of some functional head

(ii) motivated by ‘like heads’ coming together, in Cinque’s 32-head sequence consisting of a series of mood/ modal heads, followed by T, followed by mood/modals, and aspect.

This suggests that the order of functional heads is not as fixed or absolute across languages as suggested by Cinque.

3.5 A problem and a solution

We must however note a problem with our proposal. The structure (30) over generates. Since T(Past) has both the values [+Past] and [–Past], it allows sentences of the form (31), in which the present tense auxiliary h- and the epistemic modal hūgii co occur, as well as the sentences in (26)-(28). However, Dakkhani does not have an h- hūgii construction.

31. *Siimaa hās-Ø-ii h-ε hū-g-ii
(a name) laugh-perf-3sg.f be.past-3p.sg.f be/happen.
subjunctive-future-3p.sg.f

*‘Siima must has laughed’ (=It must be the case that Siima has laughed)

It appears that T(-Past) in Dakkhani induces a minimality violation as in Hindi-Urdu, whereas T(+Past) does not. In order to account for this split in the properties of the T head, we shall suggest a slightly more
complex upward reorganization of functional heads in Dakkhani, which follows from our suggested insertion of a generic modal head above T(Past). This head, it may be recalled, was to account for (15) (repeated below).

15. Siimaa hās-t-ii th-ii
(a name) laugh-imperf-3p.sg.f be/happen-past-3p.sg.f

‘Siima used to laugh’ (lit. Siima laughing was)

Let us assume that the modal that is thus inserted is specifically Mod_{generic}[+Past].

32. …Mod_{epistemic} Mod_{generic}[+Past] T(+/-Past) T(Future) Mood_{irrealis}…

In Dakkhani, T splits, and (T-Past) is reordered upward:

33. …Mod_{epistemic} T(-Past) Mod_{generic}[+Past] T(+Past) T(Future) Mood_{irrealis}…

Why should the split and reordering in (33) take place? We suggest that once again, the syncretism of adjacent functional projections is the operative factor. Consider again (32). T(+Past) must move into the Mod_{generic}[+Past] head in Hindi-Urdu, to generate the V-imperfect+thii ‘used to’ construction (15). Thus in Hindi-Urdu, the movement of T(+Past) is contingent on the presence of imperfect aspect. But suppose that in Dakkhani this movement of T(+Past) into Mod_{generic}[+Past] has lost the contingency on imperfect aspect: it can always occur. Then it is possible that Mod_{generic}[+Past] and T(+Past) acquire the status of a single syncretic head in Dakkhani; i.e. th- has the status of T as well as Modal in Dakkhani. This would initially give us the development (34) from (32):

34. …Mod_{epistemic} T(+Past)/Mod_{generic}[+Past] T(-Past) T(Future) Mood_{irrealis}…

In (34), T(+Past) occurs above T(-Past). We must now assume that T(-Past) moves above the syncretic head T(+Past)/Mod_{generic}[+Past], for some principled reason, perhaps yet to be articulated. I.e., the Cinque hierarchy must ultimately follow from some explanation of the sequence of functional heads: a certain sequence must be shown not only to usually occur, but to be inevitable. Invoking some such principle, let us assume that T(-Past) moves up above T(+Past). We obtain (35):
35. …Mod\textsubscript{epistemic} T(-Past) T(+Past)/Mod\textsubscript{generic}[+Past] T(Future)/Mood\textsubscript{irrealis}…

If now the syncretic head T(Future)/Mood\textsubscript{irrealis} moves above T(+Past)/Mod\textsubscript{generic}[+Past], the result is the hierarchy (36), which allows the \textit{thii hûgii} construction in Dakkhani.

36. …Mod\textsubscript{epistemic} T(-Past) T(Future)/Mood\textsubscript{irrealis} T(+Past)/Mod\textsubscript{generic}[+Past]…

Again, we must leave the precise motivation for this movement of Future above Past, to future research.\textsuperscript{6}

4. IMPLICATIONS OF OUR ANALYSIS

Our analysis suggests that the Dakkhani \textit{thii hûgii} construction actually permits the co-occurrence of modal heads, rather than the co-occurrence of an unambiguous tense head with a modal. It explains the absence of a \textit{he hûgii} construction in Dakkhani, and it builds on the fact that Hindi-Urdu allows a generic modal reading for \textit{th}-. The development in Dakkhani is that this modal status is always available to \textit{th}-. Since non-past \textit{h}- is never a modal in either language, the Dakkhani modal \textit{hûgii} cannot co-occur with it. Thus the generic past modal construction (15) in Hindi-Urdu as well as in Dakkhani sets the stage for a further development in Dakkhani, of the \textit{thii hûgii} construction.

Under Cinque’s proposal, the only scope for variation among languages is the lexical expression or non-expression of each functional head, depending on whether it has a marked positive value or not. This can account for why certain heads are superficially absent or unexpressed in certain languages. It does not suffice to account for the parametric

\textsuperscript{6} A reviewer suggests that in Hindi-Urdu as well as Dakkhani, T(+Past) and (-Past) may be separate heads; that only T(+Past) may be deictic, and generated below all the modals. This larger question about the nature of Tense in Hindi-Urdu is implicit in our account of its clause structure, which (as Iffat 2006:28, and 48, n.4) points out, is reminiscent of Dravidian (Amritavalli & Jayaseelan 2005). The claim for Dravidian is that finiteness (the deictic element in Tense) lodges in Indicative mood rather than in a temporal projection. The corresponding claim for Hindi-Urdu might be that only past tense is deictic. We leave the problem open.
variation between Dakhani and Hind-Urdu in what we call the \textit{thii h"ugii} construction in Dakhani. Notably, both the lexical items \textit{thii} and \textit{h"ugii/hoogii} are present in both Dakhani and Hindi-Urdu, hence a difference in the availability of lexical resources cannot by itself account for the variation. Our proposal is that Cinque’s universal hierarchy of functional heads is not absolute and immutable, and that parametric variation may arise from a reordering of the functional heads. This reordering is upward, and motivated by feature syncretism and some principled ordering of functional heads within the hierarchy. Thus the order of functional heads differs in Hindi-Urdu and Dakhani as shown below:

37. $\cdots$ Mod_{epistemic} Mod_{generic[+Past]} T(Past) T(Future) Mood_{irrealis} \cdots$ Asp_{perf} \\
(Hindi-Urdu)

38. $\cdots$ Mod_{epistemic} T(-Past) T(Future)/Mood_{irrealis} T(+Past) Mod_{generic[+Past]} \cdots$ Asp_{perf} \\
(Dakhhani)

Our account of the parametric variation is embedded in an account of the clause structure of Hindi-Urdu. For convenience, the Hindi-Urdu verb sequences discussed in this paper are all listed in the Appendix.
### APPENDIX

Verb sequences in Hindi-Urdu

<table>
<thead>
<tr>
<th>(i)</th>
<th>T(Past)</th>
<th>(V)</th>
<th>Asp&lt;sub&gt;prog&lt;/sub&gt;</th>
<th>V</th>
<th>(\text{hās rahii he} / \text{hās rahii thii})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>th(ii)/h(ε)</td>
<td>(h-))</td>
<td>rah(ii)</td>
<td>hās</td>
<td>“(she) is laughing / was laughing”</td>
</tr>
<tr>
<td>(ii)</td>
<td>T(Past)</td>
<td>(V)</td>
<td>Asp&lt;sub&gt;perf&lt;/sub&gt;</td>
<td>V</td>
<td>(\text{hāsii he} / \text{hāsii thii})</td>
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<tr>
<td></td>
<td>th(ii)/h(ε)</td>
<td>(h-))</td>
<td>Ø(ii)</td>
<td>hās</td>
<td>“(she) has laughed / had laughed”</td>
</tr>
<tr>
<td>(iii)</td>
<td>Mod&lt;sub&gt;generic[+Past]&lt;/sub&gt; T(Past)</td>
<td>(V)</td>
<td>Asp&lt;sub&gt;imperf&lt;/sub&gt;</td>
<td>V</td>
<td>(\text{hāstii he} / \text{hāstii thii})</td>
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<tr>
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<td>/h(ε)</td>
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<td>(iv)</td>
<td>T(Past)</td>
<td>(V)</td>
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<td>V</td>
<td>(\text{hāsii})</td>
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<tr>
<td></td>
<td>Ø</td>
<td>Ø(ii)</td>
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<td>“(she) laughed”</td>
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<tr>
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<td>T(Future) Mood&lt;sub&gt;irrealis&lt;/sub&gt;</td>
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<td>(\text{hāseegii})</td>
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<td></td>
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<tr>
<td></td>
<td>-g(ii)</td>
<td>ee</td>
<td>hās</td>
<td></td>
<td>“(she) will laugh”</td>
</tr>
<tr>
<td>(vi)</td>
<td>Mod&lt;sub&gt;epistemic&lt;/sub&gt; T(Future) Mood&lt;sub&gt;irrealis&lt;/sub&gt;</td>
<td>(V)</td>
<td>Asp&lt;sub&gt;prog&lt;/sub&gt;</td>
<td>V</td>
<td>(\text{hās rahii hoogii})</td>
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<td></td>
<td>hoog(ii)</td>
<td>g(ii)</td>
<td>(oo-)</td>
<td>(h-))</td>
<td>rah(ii) hās “(she) must be laughing”</td>
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<tr>
<td>(vii)</td>
<td>Mod&lt;sub&gt;epistemic&lt;/sub&gt; T(Future) Mood&lt;sub&gt;irrealis&lt;/sub&gt;</td>
<td>(V)</td>
<td>Asp&lt;sub&gt;perf&lt;/sub&gt;</td>
<td>V</td>
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<td></td>
<td>hoog(ii)</td>
<td>g(ii)</td>
<td>(oo-)</td>
<td>(h-))</td>
<td>t(ii) hās “(she) must/will be laughing”</td>
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REFERENCES


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