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► **To cite this version:**

Ghanshyam Sharma. Towards a unified linguistic approach to conditionals – Some empirical evidence. Palgrave Macmillan. Conditionals: Logic, Linguistics and Psychology, Springer, <https://link.springer.com/book/10.1007/978-3-031-05682-6>, 2023, 978-3031056819. hal-04254708

**HAL Id: hal-04254708**

**<https://inalco.hal.science/hal-04254708>**

Submitted on 26 Oct 2023

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# **Towards a unified linguistic approach to conditionals – Some empirical evidence**

**Abstract:** This paper reappraises Greenberg's Universal of Word Order 14 concerning the linear order of the two clauses in a conditional construction. It also looks into the linguistic criteria for defining a conditional construction, as laid down by Comrie (1986). These criteria include clause order, markers of protasis and apodosis, degrees of hypotheticality and time reference. The paper asserts that adopting a unified approach to the linguistic typology of conditionals is crucial for any linguistically oriented research into conditional constructions. The paper attempts to satisfy this need and introduces a scale of hypotheticality in relation to the epistemic stance of both the Speaker (s) and the Hearer (h).

**Keywords:** conditionals, typology, empirical evidence, cross-linguistic data

## **1 Introduction**

The purpose of this article is to shed light on the characterization of conditionals by looking into their typological linguistic structure. As is well known, a proper understanding of conditional constructions in human languages is essential for a number of disciplines, including logic, linguistics, psychology, cognitive science, artificial intelligence, and others. However, despite their fundamental importance to a range of disciplines and despite being a primarily linguistic phenomenon, conditionals have not attracted as much scholarly attention from linguists as they demand. While there have been some noteworthy typological as well as theoretical studies in the last few decades (Comrie 1986; Wierzbicka 1997; Haegeman 2003; Xrakovskij 2005; Bhatt and Pancheva 2006; Thompson et al. 2007), more linguistic research into conditional constructions is needed. This paper attempts to make a small contribution to filling this gap in the literature. Since the subject itself is extremely large, and the debates surrounding it have been wide-ranging, it will not be possible here to deal thoroughly with every argument or to address all aspects of conditionals. Instead, this paper will limit its scope to pursuing two principal objectives: revisiting Greenberg's Universal 14 and, in the light of recent research, reviewing some of the proposals made by Comrie (1986).

## 2 The conditional construct and its syntax

Giving a concise definition of a conditional construct has always been simpler in logic than in linguistics. In extensional logic, the ‘material conditional’ relation between two propositions that make up a conditional construction, namely  $P \supset Q$ , is considered the sole criterion for determining a conditional construction and giving an account of its truth-conditions. As a result, in extensionally oriented linguistic studies, the concept of the material conditional has been found applicable to the study of natural language conditionals (Williamson, 2020), and is considered to be synonymous with an *if–then* construction.<sup>1</sup> As we shall see later, however, there are languages in which the two clauses are not always marked with any specific morphological devices comparable to English *if* and *then* markers. Furthermore, since most of the foundational research into conditional constructions has been carried out using examples drawn from the English language, our understanding of the complex phenomenon of conditionals is largely dependent on the way conditionals are structured in this particular language. Obviously, any generalizations based solely on the conditional constructs of English will inevitably be limited.

Acknowledging the difficulty of describing a conditional construction in languages other than English, Wierzbicka (1997) comes up with a seemingly workable solution. She claims that the construct introduced by *if* is a primitive lexico-grammatical universal and ‘is one of those relatively simple and clear concepts which cannot be made clearer by decomposing them into simpler concepts’ (1997: 15). Furthermore, defining the concept is of no great importance, according to Wierzbicka, as ‘there is little point in trying to define simple concepts (such as, for example, WANT, THINK, KNOW or SEE) in terms of more complex ones (such as, for example, “volition”, “deontic modality”, “cognition”, “epistemic modality”, “information”, “vision” and so on). Similarly, there is little point in trying to define *if* in terms of more complex concepts such as “hypothetical”, “inference”, or “possible worlds” (1997: 17). Although

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<sup>1</sup> On the viability of using the term ‘material conditional’ in natural language, Barwise (1986: 21) has the following to say: “For those of us involved in the attempt to spell out the relation between statements and those aspects of reality they are about, conditionals are a thorny issue. Within this semantic tradition, common wisdom can be summarized rather contentiously as follows: classical model theory gives us the semantics of the material conditional. It works fine for mathematical conditionals, but is a disaster if applied to ordinary language conditionals, especially counterfactual conditionals. Within the possible worlds framework, there are various treatments, some of which are quite successful for certain types of natural language conditionals, including counterfactuals, but they are all a disaster when applied to mathematical conditionals.”

Wierzbicka's claim might seem to pinpoint the difficulty in defining a conditional construct, it needs to be substantiated by more empirical data and further research. Following Wierzbicka's line of argument, one is confronted with a rather obvious question: assuming that *if* belongs to a class of lexico-grammatical universal primitives, why do many languages not exhibit conditionality through a specific marker similar to *if*? Undoubtedly, conditionality as an abstract concept is a part of human reasoning and can thus be considered a universal phenomenon. However, more empirical research is needed to establish how primitive lexico-grammatical universal concepts are displayed cross-linguistically. In the context of Wierzbicka's project – namely, paraphrasing the object language in the object language itself without any recourse to a metalanguage or truth conditions – it makes sense to say that IF cannot be reduced to anything simpler. Regrettably, as things currently stand, her proposal to abandon any sophisticated terminology, such as volition, epistemic modality, deontic modality, etc., and adopt instead her rather embryonic universal primitive lexico-grammatical category IF, does not lead to any significant insight into the complexity of conditional constructions.

With respect to the syntax of conditionals, Bhatt and Pancheva (2006) present a detailed summary of the different proposals for describing the conditional clause found in modern syntactic theory. These include regarding the conditional clause as an adverbial, an interrogative or a correlative. Bhatt and Pancheva (2006: 640) seem to hold to the first of these proposals and maintain that a conditional clause (i.e. an *if*-clause) is similar to an adverbial clause:

Conditional structures involve an adverbial clause, often referred to as the **CONDITIONAL CLAUSE**, **ANTECEDENT** or **PROTASIS** (the underlined constituent in (1)), and a main clause, known as the **CONSEQUENT** or **APODOSIS**. Conditional structures are interpreted, in general terms, with the proposition expressed by the antecedent clause specifying the (modal) circumstances in which the proposition expressed by the main clause is true. Thus, (1) states that the possible worlds/situations in which Andrea arrives late (the denotation of the conditional clause) are possible worlds/situations in which Clara gets upset (the denotation of the main clause).

(1) If Andrea arrives late, Clara will get upset.

...

Conditionals are not unique in their overall structure, rather conditional clauses belong to a class of adverbial clauses that includes, among others, clausal adverbials of time, cause, and concession, as illustrated in (3).

- (3) a. If Andrea arrived late, Clara must have gotten upset.  
 b. When Andrea arrived late, Clara got upset.  
 c. Because Andrea arrived late, Clara got upset.  
 d. Although Andrea arrived on time, Clara got upset.

Like the other clausal adverbials, conditional clauses are typically introduced by a CP-related element, a complementizer or an operator in Spec, CP (cf. *if*, *when*, *because*, *although* in (3) above). And like the other adverbial clauses, conditional clauses may precede or follow the main clause.

The idea that the *if*-clause is an ‘adverbial’ is fully developed and forcefully argued in Haegeman & Schönenberger (this volume), who present the typology of conditional clauses as part of the wider typology of adverbial clauses. They maintain that: “like other adverbial clauses, clauses introduced by the conjunction *if* display (at least) three readings: (i) an event conditional encodes a condition on the event expressed in the main clause; (ii) a factual conditional encodes a background assumption which serves as the basis for the processing of the root proposition; (iii) a speech-event conditional encodes a condition on the speech event.”

While the conditional clause may appear to be similar to adverbial clauses syntactically – and thus thought to be comparable with adverbials of time, cause or concession in presenting a uniform syntactic analysis – a closer look reveals that from a semantic point of view these different types of clauses do not carry the same epistemic stance that a speaker adopts when making an utterance using them. Thus, an *if*-clause cannot be equated semantically with adverbials of time, cause or concession, as the semantic contribution it makes differs from the contribution made by these adverbials.

To highlight the difference between an *if*-clause and other types of adverbials, let us consider the epistemic stance adopted by the speaker in uttering each of the propositions listed above in the quotation from Bhatt and Pancheva, along with an additional counterfactual clause:

**Table 1: Speaker’s epistemic stance (P stands for the proposition “Andrea arrived late”)**

Subordinate proposition P	Clause type	Speaker’s epistemic stance
a. When Andrea arrived late,	Time adverbial	$K_s \Box P$
b. Because Andrea arrived late,	Cause adverbial	$K_s \Box P$
c. Although Andrea arrived on time,	Concession adverbial	$K_s \Box P$
d. If Andrea arrived late,	<i>If</i> -clause	$\neg K_s P \vee \neg B_s P$
e. If Andrea had arrived late,	<i>If</i> -clause (counterfactual)	$K_s \neg P \vee B_s \neg P$

As Table 1 clearly shows, in uttering *When Andrea arrived late ...*, *Because Andrea arrived late ...* or *Although Andrea arrived late ...*, the speaker adopts an epistemic stance of certainty (i.e. for all the speaker knows it is necessarily P), thus indicating that the speaker knows Andrea arrived late, whereas in uttering *If Andrea arrived late ...*, the speaker neither knows nor believes that Andrea arrived late. Thus, the truth-condition of Andrea arriving late in *If Andrea arrived late* has to be ascertained in an alternative world, which is introduced by the protasis marker *if*. When it comes to counterfactuals, the speaker’s epistemic stance is quite the opposite. In uttering *If Andrea had arrived late*,

both the speaker and the addressee either know or believe for certain that Andrea did not arrive late. Whether this distinctiveness of the *if*-clauses can have repercussions for the syntactic analysis of a conditional statement is a complex subject worthy of further discussion. Nevertheless, we believe that the difference between the factual nature of time, cause or concession adverbials and the non-factual nature of *if*-clause cannot be considered solely as a semantic issue, because it is also of relevance to syntactic theory.

Another view on the conditional clause worth mentioning – and the one we consider the most promising for a comprehensive cross-linguistic survey of conditional clauses – is that advanced by Bhatt and Pancheva (2006: 639). This sees conditional clauses as: “... essentially free relatives of possible worlds. Similarly to the more familiar instances of free relatives of individuals, (i) conditional clauses likely involve clause-internal operator-movement to Spec, CP; (ii) they receive the interpretation of definite descriptions; and (iii) they may participate in correlative structures, as happens in the subcase of conditionals with the proform *then*.”

According to this line of research, just like correlative constructions, conditional constructions involve a free relative clause adjoined to the matrix clause and co-indexed with a proform inside it: [free relative]<sub>i</sub> [ . . . proform<sub>i</sub> . . . ]. In fact, in many languages, particularly in many South Asian languages, conditional constructions are to some extent comparable to correlative constructions. It has also been claimed that in some languages, the *if*-clauses are historically derived from correlative constructions:

Our proposal that *if*-clauses are free relatives, i.e., definite descriptions of possible worlds, naturally predicts that they should be able to appear in the correlative construction. Geis (1985), von Stechow (1994), Izvorski (1997) among others have suggested that conditional constructions are related to correlatives. Geis was perhaps the first to note that conditional constructions in English are the remnants of a strategy of correlativization that was once more productive in the language. Treating some conditionals as correlatives helps us to understand several aspects of the behavior of conditionals crosslinguistically. In languages where correlativization is a productive strategy, it is apparent that conditionals are correlatives (e.g. Marathi). (Bhatt and Pancheva 2006: 661).

The literature has made it abundantly clear that providing an exhaustive definition of conditionals which would encompass all the divergent syntactic characteristics that are attested cross-linguistically remains a challenging task. Moreover, this is a task that requires research based on empirical evidence, rather than pure theoretical discussion. Hoping that further research into the syntax of conditional constructions and their detailed cross-linguistic survey will eventually reveal some hitherto unknown characteristics of conditionals, for the moment, we have no option but to accept the general description of conditionals given by Traugott et al., who write as follows: “Conditional (*if*-then) construc-

tions directly reflect the characteristically human ability to reason about alternative situations, to make inferences based on incomplete information, to imagine possible correlations between situations, and to understand how the world would change if certain correlations were different.” (1986: 3).

### 3 Clause order and clause marker

A conditional statement is made up of two clauses, namely the protasis (also known as the conditional clause, subordinate clause, P-clause, *if*-clause or antecedent) and the apodosis (also known as the conclusion, principal or main clause, Q-clause, *then*-clause or consequent).<sup>2</sup> Concerning the ordering of these two clauses, Greenberg’s Universal of Word Order 14 states the following:

In conditional statements, the conditional clause precedes the conclusion as the normal order in all languages. (1963: 84)

Greenberg’s Universal 14 is a well-established and widely accepted syntactic principle. The idea that the protasis-apodosis clause order is the universal order was examined in detail by Lehman (1974), who reported that no empirical data could be found to call into question the normal protasis-apodosis clause order. He concluded that whenever apodosis-protasis ordering does occur, it is to be considered either non-normal or highlighted for some reason.

Protasis-apodosis order is congruent with the speaker’s communicative strategy, whereby the speaker both engages the addressee in contemplating a potential disjunction and also uses this potential disjunction as the grounds for developing an argument. Furthermore, protasis-apodosis ordering resembles the order of human reasoning and shows ‘parallels between order of elements in language and order of elements in experience’ (Traugott et al. 1986: 9). The protasis-apodosis order is also supported by Haiman (1978), who claims that a conditional clause (i.e. protasis) shares the typical properties of topic elements found in many languages and is thus placed first.

Granted the foregoing statement, broadening our knowledge of conditional clauses requires a cross-linguistic typological study in which this widely accepted generalization can be scrutinized. Greenberg’s Universal establishes that the protasis-apodosis is the normal order; however, this suggests that apodosis-first and protasis-second is possible. In the following paragraphs, I will argue

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<sup>2</sup> In line with the linguistics tradition, I have chosen to use the terms ‘protasis’ and ‘apodosis’ here, although I believe the terms ‘antecedent’ and ‘consequent’ are a more appropriate way of denoting the two clauses in a conditional construct.

that, in a conditional statement, protasis-first and apodosis-second is the only possible order. I will further maintain that the seeming apodosis-protasis order purportedly attested in various languages is due to the phenomenon of ‘fronting’ the proposition contained in the apodosis. In other words, it is the proposition contained in the apodosis which is pre-posed or fronted, not the entire apodosis, since no language to our knowledge exhibits a “marked apodosis-marked protasis” order. Furthermore, there are languages such as Hindi in which the protasis is optionally marked and the apodosis is obligatorily marked, but the so-called apodosis marker does not move with the apodosis when it is fronted. This peculiarity reveals the need for further investigation into the Hindi conditional constructions.

Our subsidiary claim is that the placing of the protasis in the second position is not due to an after-thought on the part of speaker, as suggested by Comrie (1986), who says, ‘Given that it seems to be commoner cross-linguistically for the protasis to be marked overtly as non-factual than for the apodosis to be so marked ..., placing the overtly marked protasis in front of the unmarked apodosis avoids the apodosis being interpreted as a factual statement’ (Comrie 1986: 84). As I maintain elsewhere (Sharma 2011), contrary to widely held belief, no language actually seems to exhibit a marked apodosis in the sentence-initial position. In other words, there is no evidence of any sort to demonstrate the apodosis-protasis ordering in conditionals. This finding may have repercussions for syntactic theories that classify the protasis under the blanket term *adverbials*.

### 3.1 Markers of protasis and apodosis

The conventional wisdom is that one or both of the two clauses that make up a conditional construction are marked either overtly (through a separate morphological device) or covertly (through special verb forms). Furthermore, it is also believed that the marking of the conditional clauses may be obligatory either for both clauses or for one clause only, as is the case in English. To have cross-linguistic validity, however, a unified theory of conditionals has to develop tools to analyze data from as many divergent languages as possible, and necessarily from languages that are structurally different from well-studied languages such as English. Keeping in mind this necessity, we can postulate different types of clause combinations to cover some, if not all, of the possible scenarios (Sharma 2010, 2011):



**Table 2: Types of marked clauses in conditionals**

1. Non-overtly marked P + Non-overtly marked Q	
2. Obligatorily marked P + Obligatorily marked Q	Ngiyambā, etc.
3. Obligatorily marked P + Non-obligatorily marked Q	English, French, Italian, etc.
4. Non-obligatorily marked P + Obligatorily marked Q	Hindi, etc.
5. Obligatorily marked P + Non-overtly marked Q	Chinese, etc.
6. Non-obligatorily marked P + Non-overtly marked Q	
7. Morphologically marked P + Unmarked Q	Tamil, Telugu, Kannada, etc.
7. Non-overtly marked P + Obligatorily marked Q	
8. Non-overtly marked P + Non-obligatorily marked Q	

As can be seen from Table 2, different types of possible clause markings can be hypothesized. A unified approach to conditional clause markings has to take into account this cross-linguistic diversity – a task which requires a detailed survey of languages belonging to divergent families. However, to offer a glimpse of the diversity involved here, let us consider five cases that have attracted major attention already: CLASS I: Ngiyambā; CLASS II: English, French, Italian, etc.; CLASS III: Hindi, among others; CLASS IV: Chinese, etc.; and CLASS V: Tamil, Telugu, Kannada, Malayalam, etc.

### 3.1.1 Class I: Overtly and obligatorily marked P + Overtly and obligatorily marked Q

Ngiyampā (or Ngiyambā) – an Australian aboriginal language – is reported to belong to this peculiar class in which there is an overt marking of both clauses. Furthermore, both clauses in this language are said to be marked by the same clitic, *-ma*. Given this phenomenon, it is not clear how a protasis and an apodosis can be identified independently. From the literature, all we know is that a conditional sentence has a rigid clause order with no possibility of clause inversion, and that the first clause of a conditional sentence is considered the protasis. Comrie (1986: 84) cites the following example from Ngiyambā (referencing Donaldson 1980: 251–252), observing that ‘in Ngiyambā, with past tense counterfactuals, both clauses have the same overt marking (with the clitic *-ma*), and the first must be interpreted as protasis ...’:

- (1) Nginuu-*ma*-ni burray giyi, ngindu-*ma*-ni yada gurawiyi  
 Lit. ‘your-counterfactual-this child was, you-counterfactual-this well  
 looked-after’  
 ‘If this child had been yours, you would have looked after it well.’

I believe further research is needed to establish whether the so-called past tense counterfactual morpheme attested in the protasis and the apodosis in (1) does, in fact, mark both the protasis and the apodosis, rather than perform different functions in different contexts. A plausible hypothesis is that the *-ma* particle is a marker of counterfactuality rather than a marker of both protasis and apodosis. In fact, marking counterfactuality through the same morphological device is a widespread phenomenon. It also remains to be seen whether this phenomenon is limited solely to counterfactuals, or whether it is found as well in other types of conditionals in this language. However, the essential point is that there are languages such as Ngiyampā which are said to exhibit overt clause marking of both clauses in counterfactuals but which do not allow a clause inversion. This supports the claim that Q-P order is not possible.

### 3.1.2 Class II: Overtly and Obligatorily marked P + Overtly but not-obligatorily marked Q (the dubious nature of the English ‘then’)

English, French and Italian, among many other European languages, belong to this class. It is the most investigated class of languages in which only the protasis is believed to be obligatorily marked. The apodosis is thought to be marked by an optional marker. Since our understanding of conditionals in human language is shaped mainly by the results obtained from analyses of conditional constructions attested in this class of languages, particularly English, it is important to look closely into the structural properties of conditionals in languages belonging to this class. The data from English, French and Italian, for example, clearly suggest an obligatory marking of the protasis, which is obtained through *if*, *si* and *se*, respectively:

- (2) a. *If* Mary invites John, he will go to her party.  
 b. *Si* Mary invite John, il ira à sa fête.  
 c. *Se* Mary invita John, lui andrà alla sua festa.

As can be observed in (2), the presence of the protasis marker *If*, *Si* and *Se* in the three examples from English, French and Italian is obligatory. All three examples are grammatically correct without their respective apodosis markers *then*, *alors* and *allora*, but not without their respective protasis markers.

With regard to the former, the optional marking has been widely discussed. In particular, there has been a long debate on the real contribution of the so-called English apodosis marker *then* in a conditional sentence (Geis and Zwicky 1971; Iatridou 1994; Dancygier and Sweetser 1997; van der Auwera 1997; Horn 2000; Cariani and Rips, this volume). It has been argued that the English marker *then* carries a bi-conditionality meaning which is derived from the pragmatic scalarity in the protasis. For example:

- (3) a. If you mow my lawn, I'll pay you ten dollars.  
 b. If you mow my lawn, *then* I'll pay you ten dollars.

The example in (3b), according to this line of research, means that ten dollars will be paid *if and only if* the lawn is mowed. Given that the purported English apodosis marker *then* carries a bi-conditionality meaning derived from the pragmatic scalarity in the protasis, a plausible explanation of *then* is that it is associated with the protasis rather than with the apodosis. According to this proposal, the so-called apodosis marker *then* is, in fact, a pragmatic marker which induces implicatures, giving rise to bi-conditional readings, as discussed by the abovementioned scholars. To show the pragmatic affiliation of *then* with the protasis, we can roughly present (3a) and (3b) in the following manner:

- (4) a. [If you mow my lawn], I'll pay you five dollars.  
 b. [If you mow my lawn then], I'll pay you five dollars.

As (4b) shows, “If” and “then” belong together, which supports the proposal that *then* is a pragmatic marker, as it seems to belong to the protasis not to the apodosis. In order to investigate this phenomenon further, let us consider some other characteristics of the English *then*.

First, as Bhatt and Pancheva (2006) have noted, *then* has to be adjacent to the protasis, as in (5a):

- (5) a. If it rains, then I think that we should stay at home.  
 b. \*If it rains, I think that then we should stay at home.<sup>3</sup>

In syntactic terms, it has been argued that the surface location of *then* marks a predicate that combines with the *if*-clause, and therefore that *then* must be structurally adjacent to that clause. However, the fact that *then* in such circumstances

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<sup>3</sup> Some native speakers of English do not find this sentence ungrammatical.

has to be adjacent to the protasis also proves that it is semantically and pragmatically associated with the protasis rather than with the apodosis, because it has to pick out the pragmatic scalarity meaning from the protasis.

Secondly, there is a restriction on the use of *then* in those situations in which the protasis contains pragmatic elements expressing other pragmatic scales. In fact, itself being a pragmatic scalarity marker, *then* conflicts with other scalarity markers such as *even if* and *only if*, as examples (6) and (7) clearly show:

- (6) Even if it rains, (\*then) the football game will happen.  
 (7) Only if it is sunny, (\*then) will I visit you.

Thirdly, Iatridou (1994) and Dancygier & Sweetser (1997) have variedly argued that there is a restriction on the use of *then* when the protasis includes a reference to a generic time or event, as in (8):

- (8) If Mary bakes a cake, (\*then) she gives some slices of it to John.

The ungrammaticality of (8) derives from the fact that the protasis does not exhibit a definite pronominal anaphora which *then* could pick up. Instead, it has a generic pronominal reference *at all times* or *whenever*, which is not compatible with *then*.

Yet another restriction on *then* is ascribed to von Stechow's observation concerning its incompatibility with *unless* (reported by Bhatt and Pancheva 2006), as in (9):

- (9) Unless it rains tomorrow, (# then) I won't leave.

The ongoing discussion makes it clear that, in English, *then* is a pragmatic marker (or discourse marker) rather than a logical connective or marker of the apodosis. Its presence in a conditional statement seems to highlight the speaker's attitude to the protasis and the fact that the speaker is prepared to assert what is coming next on the basis of whatever it is that *then* is referring back to earlier in the sentence. Moreover, whenever *then* occurs alone, its role is to invoke the protasis in discourse:

- (10) A: Did you know that Oswald would be coming to the party tomorrow.  
 B: *Then*, I won't be.  
 = If Oswald is coming to the party tomorrow, *then* I won't be coming.

In sum, any cross-linguistic research into conditional constructions must keep in mind this peculiarity of English conditionals and not immediately go in search of equivalent apodosis markers in other languages, since the presence

and contribution of the so-called marker of apodosis *then* in English – and probably in all languages belonging to this class of languages – remains highly dubious. As we will see in section 3.1.3, the same is true of the supposed apodosis marker *to* in Hindi which is an integral part of the protasis (or antecedent). For this reason, we presume that an apodosis (or consequent) is never marked in any language, even though an apodosis is commonly called “*then*-clause”.

### 3.1.3 Class III: Overtly but not obligatorily marked P + Overtly and obligatorily marked Q (the supposed Hindi apodosis marker *to*)

Now, let us focus on the class of languages in which the protasis can be marked (optional marking), but the apodosis has to be marked (obligatory marking). Hindi belongs to this class of languages. The use of the so-called Hindi apodosis marker *to* (then) is obligatory in a conditional construction, regardless of the presence or absence of the protasis marker *agar/yadi* (*if*), as can be observed in Table 3:

**Table 3:** Grammaticality test of presence or absence of P and Q markers ( $\emptyset$  stands for a null marker)

If Ram comes/came, I will/would ask him.							
	<i>agar</i>	<i>Rām</i>	<i>āyā,</i>	<i>to</i>	<i>mē</i>	<i>us=se</i>	<i>pūchūṅgā</i>
	if	Ram	come.PFV.M.SG	then	I	he-ABL	ask-FUT.M.SG
(a)	√	P-marker		Q-marker			
(b)	√	$\emptyset$		Q-marker			
(c)	?	P-marker		$\emptyset$			
(d)	*	$\emptyset$		$\emptyset$			

It is notable that, in the case of clause inversion, i.e. apodosis-protasis order, the marker *to* (then) follows the protasis even when the apodosis has to dislocate due to fronting of the proposition, as can be observed in Table 4. Consequently, absence or displacement of *to* (then) renders a Hindi conditional either ungrammatical or semantically odd, as can be observed in (b), (c) and (d) in Table 4:

**Table 4:** Markers in an inverted ordering of clauses (\* stands for ungrammatical sentence;  $\emptyset$  is a null marker)

Q-P I will/would ask Ram if he comes/came.						
(a)	√	<i>mē</i>	<i>Rām=se</i>	<i>pūchūṅā</i>	<i>agar</i>	<i>vo āyā to</i>
		I	Ram-ABL	ask-FUT.M.SG	P-marker	he come-PFV.M.SG Q-marker
(b)	* Q-marker				P-marker	
(c)	* Q-marker				$\emptyset$	
(d)	* $\emptyset$				$\emptyset$	

In a nutshell, as Tables 3 and 4 show, the conditional constructions in Hindi exhibit a peculiarity with respect to the use of the so-called apodosis marker, in that it is required even when the proposition contained in the apodosis, for whatever reason, has to be preposed or fronted. Table 5 presents the grammaticality test of Hindi conditional constructions, as outlined above. Notice that the Hindi Q-marker – whose presence is obligatory – does not dislocate with Q when it is pre-posed, as (f) in Table 5 clearly shows:

**Table 5: Grammaticality test of Hindi conditional constructions**

	P-clause		Q-clause	Marker	Acceptability
(a)	marked-P	-	marked-Q		√
(b)	unmarked-P	-	marked-Q		√
(c)	marked-P	-	unmarked-Q		*
(d)	unmarked-P	-	unmarked-Q		*
	Q-clause		P-clause		
(e)	unmarked-Q	-	marked-P		?
(f)	unmarked-Q	-	marked-P	<b>Q-marker</b>	√
(g)	marked-Q	-	marked-P		*
(h)	marked-Q	-	unmarked-P		*
(i)	unmarked-Q	-	unmarked-P		*

The unique linguistic characteristic of Hindi conditional sentences requires further inquiry. Let us consider the so-called ‘biscuit’ conditionals (11), imperative conditionals (12) and interrogative conditionals (13) in Hindi. Notice that, in the case of clause inversion, the tendency to place the particle *to* (then) at the end of the conditional sentence is prevalent across the language:

- (11) a. Biscuit (or relevance) conditionals P-Q  
*(agar) āp=ko bhūkh lagī ho to, biskuṭ ālmārī=mē*  
 if you=ACC hunger felt be-SUB then biscuits sideboard=in  
*rakhe hē*  
 placed are  
 ‘If you are hungry, there are biscuits in the sideboard.’
- b. Biscuit (or relevance) conditionals Q-P  
*biskuṭ ālmārī=mē rakhe hē agar*  
 biscuits sideboard=in placed are if  
*āp=ko bhūkh lagī ho to*  
 you-ACC hunger felt be-SUB then  
 ‘There are biscuits in the sideboard if you are hungry.’
- (12) a. Imperative conditionals: P-Q  
*agar tumhe apnī jān bacānī ho to bhāgo yahā=se*  
 if to you self’s life save be-SUBJ then run away here=from  
 ‘If you want to save your life, run away from here!’
- b. Imperative conditionals: Q-P  
*bhāgo yahā=se agar tumhē apnī jān bacānī ho to*  
 run away here from if to you self’s life save be-SUBJ then  
 ‘Run away from here if you want to save your life!’
- (13) a. Interrogative conditionals: P-Q  
*agar merī=ne bulāyā to kyā tum uskī pārṭī=me jāoge*  
 if Mary=ERG invited then WH you her party=in will go  
 ‘If Mary invited you, would you go to her party?’
- b. Interrogative conditionals: Q-P  
*kyā tum merī=kī pārṭī=me jāoge agar us=ne bulāyā to*  
 WH you her party=in will go if she-ERG invited then  
 ‘Would you go to Mary’s party if she invited you?’

It is interesting that this tendency seems to hold also in those Hindi conditionals containing an element of pragmatic scalarity, although in Q-P ordering there are issues concerning the acceptability of the conditional sentences. For example, in protasis-apodosis order, (14a) and (15a), the apodosis marker *to* ‘then’ behaves normally, whereas in apodosis-protasis order, (14b) and (15b), the presence of the marker *to* ‘then’ seems to be in conflict with the element of pragmatic scalarity, leaving the Hindi sentences grammatically unacceptable.

- (14) a. *Only if* Conditionals: P-Q  
*(agar) merī john=ko bulāe to hī*  
 if Mary John=ACC invited then only  
*vo uskī pārṭī=mē jāegā*  
 he her party=in will go

‘Only if Mary invites John, will he go to the party.’

b. *Only if* Conditionals: Q-P

?*john pāṛṭī=mē jāegā* (agar) *merī use bulāye to hī*  
 John party=in will go if Mary him invited then only  
 ‘John will go to the party only if Mary invites him.’

(15) a. *Even if* Conditionals: P-Q

(agar) *merī john=ko bulāe to bhī*  
 if Mary John=ACC invite-SUBJ then even  
*john pāṛṭī=mē nahī jāegā*  
 John party=in not will/would go  
 ‘Even if Mary invites/invited John, he will/would not go to the party.’

b. *Even if* Conditionals: Q-P

?*john pāṛṭī=mē nahī jāegā* (agar) *merī use*  
 John party=in not will go (if) Mary him  
*bulāye to bhī*  
 invite-SUBJ then even  
 ‘John will not go to the party even if Mary invites him.’

Examples (11) through (15) suggest that the so-called Hindi apodosis marker *to* (then) is a peculiar case. Even though it looks like a marker of apodosis, it does not move leftward together with the apodosis when the latter is fronted or pre-posed. This strongly suggests the hypothesis that it is only the proposition contained in the apodosis which is fronted, not the entire apodosis. Another hypothesis worth examining is that the Hindi apodosis marker *to* has a dual role to play in the language: at times, as a PROFORM, it plays the role of a connective, but it can also be employed as a marker of pragmatic scalarity. Obviously, there is a strong need for more in-depth research into the role played by the so-called Hindi apodosis marker *to* ‘then’.

### 3.1.4 Class IV: Overtly but not obligatorily marked P + Overtly but not obligatorily marked Q

Mandarin is said to overtly, but not obligatorily, mark both protasis and apodosis. Although the marking of two clauses in a conditional statement in Mandarin is not obligatory, their ordering is obligatorily fixed. In other words, the first clause is always protasis whether it is marked or not. Keeping in mind this peculiarity, Comrie (1986: 85) asserts that ‘the protasis necessarily precedes the apodosis, whether the protasis alone is marked for non-factuality (by a conjunction such as *rúguō* ‘if’), whether the apodosis alone is marked (for instance by *nà* and/or *jìu* ‘then, in that case’), whether both are marked, or whether neither is marked’.



**Table 6:** Clause marking in Chinese ( $\emptyset$  stands for a null marker)

<b>If Zhangsan drinks wine, (then) I will scold him.</b>								
	ac- cepta- bility	( <i>rúguō</i> ) if	<i>Zhangsān hē</i> Zhangsan drinks	<i>jǐu</i> wine	<i>wǒ</i> I	( <i>jiù</i> ) will	<i>mà</i> scold	<i>tā</i> him
a.	√	<i>rúguō</i>	<i>Zhangsān hē</i>	<i>jǐu</i>	<i>wǒ</i>	<i>jiù</i>	<i>mà</i>	<i>tā</i> .
b.	√	<i>rúguō</i>	<i>Zhangsān hē</i>	<i>jǐu</i>	<i>wǒ</i>	$\emptyset$	<i>mà</i>	<i>tā</i> .
c.	√	$\emptyset$	<i>Zhangsān hē</i>	<i>jǐu</i>	<i>wǒ</i>	<i>jiù</i>	<i>mà</i>	<i>tā</i> .
d.	√	$\emptyset$	<i>Zhangsān hē</i>	<i>jǐu</i>	<i>wǒ</i>	$\emptyset$	<i>mà</i>	<i>tā</i> .

This distinctiveness of Mandarin conditional constructions is illustrated by the sentence in Table 6, a widely cited example of a construction that is correct in all circumstances.

However, according to our informant,<sup>4</sup> the so-called apodosis marker in Mandarin, namely *jiù*, might mean different things according to context. This is because *jiù* can play different grammatical or semantic roles in the Chinese language. To put it simply, it is questionable to call it an apodosis marker. Having said that, we believe that the case of Mandarin lends even stronger support to our hypothesis that protasis-apodosis ordering is the only ordering in conditional statements, regardless of the presence or absence of any overt clause markers.

### 3.1.5 Class V: Protasis marked through a special morphological form of the verb + Apodosis remaining unmarked

Languages belonging to this class express conditionality not through any distinct marker of protasis or apodosis, but rather through a special verb form contained in the protasis. Many Dravidian languages spoken in India, such as Tamil, Malayalam, Telugu and Kannada, apparently belong to this class, as can be seen from the examples (16)–(17) below (Bhatt 1999). The apodosis seems to remain unmarked except for the case of counterfactuals in Telugu, where the apodosis also exhibits a morphological mark of conditionality in the verb, as can be seen in (17c). This is a highly complex issue worthy of a detailed survey.

- (16) If Mary invites him, John will go to her party.  
a. Tamil

<sup>4</sup> Luo Yujia, a native speaker of Chinese and a doctoral candidate at INALCO, Paris

Mary avan-ai azhai-t-āl John  
 Mary.3F he-ACC invite-COND John-3M  
 aval parti-kku po-v-ān  
 her party-LOC go-FUT.3M

## b. Malayalam

Mary jōṇi-ṇe kṣaṇicc-āl avaṅ avaḷ-ute pāṛṭṭi-kkə pō-(k)um  
 Mary John-ACC invite-COND he she-GEN party-DAT go-FUT

## c. Telugu

Mary pilus-te John parti ki veL-tā-Du  
 Mary call-COND John party DAT go-FUT-PRON.SUFF

## d. Kannada

Mary avan-annu kareda-are, John-n-u  
 Mary.NOM he-ACC invite-PRS-COND John-Mas-NOM  
 Ava-L a parti-ge hoog-utt-āne  
 she-f-POSS party-DAT go-PRS.3SM

(17) If Mary had invited him, John would have gone to her party.

## a. Tamil

mēri-v-in avan-ai azhai-tt-iru-**nt-āl**,  
 Mary.3SF.GEN he-ACC invite-ADV.PART-BE-PAST-COND  
 John aval parti-kku po-y-iru-nth-iru-pp-ān  
 John her party-LOC go-BE.PAST-BE.FUT.3M

## b. Malayalam

Mary jōṇi-ṇe kṣaṇicc-iru-**nneṅkil** avaṅ  
 Mary John-ACC invite-be-COND he  
 avaḷ-ute pāṛṭṭi-kkə pō-(k)um-ā(y)-irunnu  
 she-GEN party-DAT go-FUT-be-PFV

## c. Telugu

mēri pilic-i un-Tee John parti ki  
 Mary call-CPM be-COND John party DAT  
 veLL-I un-De vāDu  
 go- CPM be-COND PRON Copy

## d. Kannada

ēri avan-annu kared-u-idda-are,  
 Mary.NOM he-ACC invite-PTCPL-was-COND  
 John-n-u ava-L-a parti-ge hoog-utt-idd-anu  
 John-Mas-NOM she-F-POSS party-DAT go-PROG-was-3SM

### 3.2 Summary

Table 7 sums up our discussion of the language classes that exhibit different possible orderings of the two clauses in a conditional statement.

**Table 7: The five classes of conditionals discussed above**

	P-Q	
Class 1	morphologically marked P - morphologically marked Q	Ngiyampā
Class 2	obligatory P marker - not obligatory Q marker	English
Class 3	not obligatory P marker - obligatory Q marker	Hindi
Class 4	not obligatory P marker - not obligatory Q marker	Chinese
Class 5	morphologically marked P - no overt marking in Q	Tamil, etc.

As Table 7 shows, languages belonging to classes 2 and 3 seem to exhibit the so-called apodosis-protasis (Q-P) ordering. In fact, data from these languages have led linguists to believe that a conditional statement may exhibit both clause orderings (i.e. P-Q and Q-P). However, as we have argued above, these cases in no way violate the universal of conditional clause ordering (namely P-Q), since in cases of Q-P ordering, only the proposition contained in the apodosis is pre-posed. A null-marker at the end of the conditional string in class 2 effectively indicates that in these languages, whenever the Q-proposition is pre-posed, it occurs as a pragmatic strategy of the speaker. Furthermore, data from the languages belonging to class 3, such as Hindi, indubitably demonstrate that, in these languages, the so-called apodosis marker, for example *to* ‘then’, cannot be omitted and, except for a few cases, must remain at the end of the conditional string, even in those cases where the apodosis-proposition has to be pre-posed or fronted. We believe that the pre-posing of the apodosis-proposition attested to in languages belonging to classes 2 and 3 (see Table 7) requires further empirical research to be better understood.

One of the reasons for Q-proposition pre-posing seems to be that conditional statements are always discourse-bound (see e.g. Akatsuka 1986). In fact, the phenomena of Q-proposition pre-posing, reduced conditionals (i.e. deletion of either P or Q), nonconditional conditionals (see Lycan 2001 for details) and pseudo-conditionals can only be understood in the light of the discourse-bound nature of conditional statements. Thus, we believe that, depending on the elements of knowledge shared by the speaker and hearer (available from the previous part of the discourse), the speaker may consider it necessary to pre-pose the apodosis in order to highlight the information contained in it, thus violating the normal clause-ordering. Another reason for apodosis-proposition pre-posing has to do with the type of modality it contains. When the speaker expresses deontic modality in making requests or orders, he/she invariably begins the conditional statement by pre-posing the apodosis-proposition, as in,

- (18) a. Sit down, if you want!  
 b. ?If you want, sit down!

We believe that similar observations can be made about other conditional statements where the apodosis carries different kinds of non-assertive illocutionary force (as is the case in uttering exclamations, interrogatives, etc.) and thus expresses a non-epistemic modality. Subject to further language-specific research, we can expect apodoses carrying non-epistemic modal meanings to be always pre-posed – irrespective of syntactic differences in languages. In sum, our analysis does not support the widely held belief that conditionals can have both orderings: P-Q and Q-P.

### 3.3 The link between P and Q

In logic, the material conditional allows any two unrelated but true propositions to be linked together (e.g. ‘If Paris is the capital of France, two is an even number’). However, as we know, not all combinations of two propositions result in conditional constructs in a natural language. In the last few decades, there has been a tremendous amount of research involving various types of psychological experiments aiming to discover the type of relation that P and Q may hold in a conditional statement. Although it would be off-topic and rather presumptuous to try to contribute to this debate in this paper, we deem it appropriate to mention that there are roughly two schools of thought with opposing views on this issue. The first group of scholars maintains that not all P and Q are linked together by a clear relation in a conditional construction. According to their line of reasoning, there are perfectly “standard” conditionals in natural language called “independence conditionals”, which do not necessitate P and Q being joined together through any particular relation (Over 2017; Cruz and Over, this volume; Over and Cruz, this volume). Scholars belonging to the other group, instead, claim that the relation between P and Q is essentially inferential, involving all three types of reasoning, namely induction, deduction and abduction (Douven et. al, this volume). As mentioned earlier, for the purpose of typological linguistics research, it will be helpful to adopt a view that envisages a kind of relation between P and Q, be it causal, inferential or whatever. In linguistic typological studies, the relation that holds the two clauses together is a prerequisite for them being called conditionals, and is often labelled ‘causal’, although it is not always easy to establish the cause-effect relationship between P and Q.

The causal relation that is thought to exist between an antecedent and its consequent has also been the topic of considerable debate in linguistics, and has been studied from different angles, including: mental spaces (Sweetser 1990),

semantic consistency (Wierzbicka 1997; Athanasiadou and Driven 1997; Declerck and Reed 2001) and syntactic parameters (Haegeman 2003). The idea of the causal relation as a requirement for a cross-linguistic study, as proposed by Comrie (1986), has been examined by Wierzbicka (1997: 19), who writes (example lettering mine):

It is true that “if” implies some sort of connection between two propositions, and also that a causal link is often involved, too; I claim, however, that the “if” connection is *sui generis*, and cannot be reduced to anything else; and that a link with “because” is not always present. For example, the sentence:

(a) *If he insults me, I will forgive him.*

does not imply that I will forgive him BECAUSE he has insulted me: it is true that I can forgive him only if he has done something bad to me (e.g., if he has insulted me), but it is not true that the insult will be the “cause” of my forgiveness. Similarly, the sentence:

(b) *If he invites me to dinner I will not go.*

does not mean that I will not go because he has invited me: if he doesn’t invite me I will not go either; and the sentence:

(c) *If he is asleep, I will not wake him up.*

does not mean that I will not wake him up because he is asleep: on the contrary, I could wake him up only if he were in fact asleep.

Consider also the following *if*-sentences, of a different kind from those cited above:

(d) *If you do this, people will know about it.*

(e) *If you do this, this will be bad.*

Clearly, here, too, there is no causal connection between the two propositions.

Despite this observation, we believe that Comrie’s idea concerning a causal link between the two propositions withstands Wierzbicka’s criticism, because (a) and (b) in the citation are not representative examples of pure conditional constructs, since they require an ‘even if’ reading which is a special case of conditionals.<sup>5</sup> As far as (c) is concerned, there is no anomaly, since X’s being asleep is in fact the cause for Y’s decision to not wake up X. Likewise, we can say that “X’s doing something causes Y’s knowing it” in (d) and “X’s doing Y will be

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<sup>5</sup> I am grateful to David Over for reminding me that even in “even if” conditionals, a link, albeit of “topic”, can be established.

the cause of its being judged bad” in (e). At any rate, the causal link between protasis and apodosis is to be viewed from the point of view of speaker and hearer, and not judged on the basis of common knowledge of how things exist or ought to be. We maintain that there is a sort of link, causal or otherwise, between the two propositions which can be established through the epistemic stance of the speaker and the hearer.

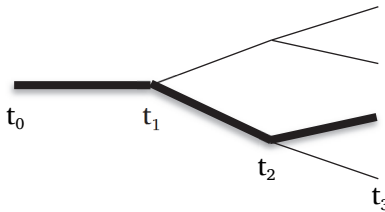
Furthermore, for the purpose of developing the criteria for a cross-linguistic typological study, we must also bear in mind that not all combinations of two propositions that are labelled ‘conditionals’ in English are so in other languages. For instance, the so-called zero conditionals in English (e.g. ‘If you freeze water, it becomes solid.’) are not conditionals in many languages. Nor are those combinations of two propositions which have a covert adverbial *whenever* or *at all times* in the protasis (e.g. ‘If I drink too much coffee, I can’t sleep at night.’). Similarly, all those conditional statements whose protasis is part of the shared knowledge of speaker and addressee (e.g. “If you are going there, I will come with you”) are not conditionals in many languages, as these sentences have other forms similar to ‘Since you are going there, I will come with you’.

## 4 Time reference in conditionals

It has been convincingly argued that the role of grammatical tenses, aspects and moods – in particular of grammatical tenses – in non-factual conditional constructions is markedly different from their use in other constructions in a language. The past time reference to counterfactuals especially has been a dominant topic of debate in linguistics for many decades now. There are important, but often conflicting, linguistic theories that deal with the use of tenses in conditionals, particularly counterfactuals (Dahl 1997; Iatridou 2000; Ippolito 2013; Kaufmann 2005, this volume; Arregui 2007, 2009; Karawani 2014; von Stechow and Iatridou 2020; Mackay 2015; among many others), which we cannot discuss in detail in this paper. Historically, the oldest and the received view concerning the hypothetical use of the English past tense is that there is a sort of “back-shifting” in hypothetical conditionals that allows the speaker to convey a belief with regard to the fulfilment of the condition the precise formulation of which depends on the time reference of the conditional clause (Quirk et al. 1985). Modifying this “back-shifting” theory, Dahl (1997) considers Tedeschi’s Branching-futures model as a suitable tool for describing the past tense in counterfactuals. According to this model, “at any point in time, there is one past and an infinite set of (possible) futures. A counterfactual situation, with respect to a point in time *t*, is located at a branch of the tree that can be

found by going backwards in time from  $t$  and then forwards along an alternative path.” (Dahl 1997). Tedeschi (1981) uses example (19) to illustrate the Branching-futures model, which is presented in Figure 1:

(19) If Germany had invaded England, they would have won the war.



**Figure 1:** Branching-futures model (adapted from Dahl 1997)

According to this line of research, assume that we are at  $t_3$ , and that  $t_1$  is the crucial point at which Hitler decided not to invade England. In the alternative branch, he did invade England at this point (or a little later), and at  $t_2$  he won the war. This suggests an interpretation of (19) as in (20):

(20) It was the case: if Germany invades England, it will be the case: Germany wins the war.

“In Tedeschi’s words, “we evaluate counterfactual conditional sentences as if we returned to the past and looked at possible futures with respect to that past”. (Tedeschi 1981). This account of the semantics of counterfactuals would thus predict precisely a combination of past and future marking in such sentences.” (Dahl 1997: 102)

Various versions of the Branching-futures model discussed above have been presented in linguistic research, notably in formal syntax and semantics. In this context, Iatridou (2000) develops a new line of research and claims that the past tense semantics can be applied both temporally and modally. She argues that the past tense morphology has an “exclusion feature” and consequently the “topic set” excludes the “speaker set”.<sup>6</sup> The modal use of the past in counterfactuals therefore signals “remoteness”. When the past is used temporally, it marks the times talked about as distinct from the speaker’s time.

<sup>6</sup> It seems that Iatridou (2000) intends this to be either sets of times or sets of worlds; in the latter case, the “speaker set” is something like “the world according to the speaker”.

When the past is used modally, it marks the worlds talked about as distinct from the actual world of the speaker. Another line of research is developed by Ippolito (2003, 2006, 2013) and Arregui (2005, 2009) among others, who claim that the additional pasts in subjunctive conditionals do after all retain their usual temporal meaning. Using a possible-world semantics technique, Kaufmann (this volume) offers perhaps the most advanced theory, including a unified account of indicative and subjunctive conditionals. That said, we cannot go into the strengths and weaknesses of all these theories within this paper.

Obviously, much of the data discussed in the formulation of the theories of tenses in conditionals just mentioned comes either mainly from English or from a handful of other thoroughly investigated languages. Hence, it is important to look at the possible contribution that can be made through the observation of the different uses of tense and aspect in conditional constructions in less-commonly investigated languages. In this section, in order to highlight the importance of these phenomena from a cross-linguistic perspective, I would like to discuss the use of verbal tenses and aspects in counterfactuals in Hindi, a subject which has already come under scrutiny in some important works (Bhatt 1997; Karawani 2014; von Stechow and Iatridou 2020). In doing so, I would like to advance a new proposal concerning Hindi counterfactuals that has not hitherto been considered in detail. A closer look at the structure of Hindi counterfactuals reveals that it is perhaps the verbal aspect, not the tense, that plays the major role in expressing counterfactuality in this language. In order to understand this, we should consider the distinction between ‘normal’ conditionals and counterfactual conditionals from the perspective of verbal aspects rather than mere tenses. According to our analysis of Hindi counterfactual conditionals, it is the imperfective aspect – not the past tense marker – that exhibits counterfactuality. If this idea is tenable, there is no need to coin new terms such as “fake habitual aspect” (von Stechow and Iatridou 2020) for an objective analysis of the Hindi counterfactual morphology.

As has been discussed in the literature (van Marle 1975; Shapiro 2003; McGregor 1995; Sharma 2002), the Hindi verbal system is structured around the tenses, aspects and moods elements, as set out in Table 8. Thought to be derived from the Old Indo-Aryan morphology (Masica 1991), the perfective/imperfective opposition has flourished in all the major New Indo-Aryan languages and is one of the most important characteristics of the Hindi verbal system, where it is the aspect which plays a major role in structuring all conditional constructions, particularly counterfactuals. There are no tense markers in Hindi counterfactuals – neither in the protasis nor in the apodosis! Both clauses exhibit the same imperfective morphology. This unique characteristic – not only of the Hindi counterfactuals but also of those in most New Indo-Aryan languages – has been discussed in Bhatt (1997). Bhatt makes some important generalizations regarding the marking of counterfactuals through imperfective



morphology in New Indo-Aryan Languages such as Hindi. First, the imperfective participle alone is the most important ingredient of the counterfactual morphology. Second, Hindi counterfactuals do not exhibit any periphrastic tense marking. Third, both the protasis and the apodosis exhibit the same imperfective morphology. These unique characteristics of Hindi counterfactual morphology have led some scholars to come up with new concepts for explaining counterfactuals such as “fake habitual aspect” (von Fintel and Iatridou 2020) and “aspect stacking” (Karawani 2014). Iatridou (2009) maintains that the imperfective aspect is fake in Hindi counterfactuals, as there is nothing in the semantics of the imperfective that makes it a necessary ingredient for rendering a counterfactual reading. Hence, according to her, it makes no semantic contribution to counterfactuality. Her conclusion is based on examples such as (21), where according to her, there is a slot for the fake imperfective (i.e. the habitual morpheme) and a slot for the real imperfective (i.e. the progressive morpheme):

- (21) a. \*vo gaa rahaa hotaa  
           he sing PROG be-HAB  
       b. agar vo gaa rahaa hotaa to log wah wah kar  
           if he sing PROG be-HAB then people wow wow do  
           rahe hote  
           PROG.M.PL be.HAB  
           ‘If he were singing, people would be going wow wow.’ (example from Bhatt 1997)

Although Iatridou’s observation that in Hindi there is a slot for the real imperfective (i.e. the progressive marker *rahaa* above) and another slot for the fake imperfective (i.e. the so-called habitual suffix *-taa* above) seems to be correct, the whole concept of “fake aspect” is based on the flawed assumption that languages can exhibit counterfactuality only through tenses. We maintain that an aspect-based model of interpretation may turn out to be useful in analyzing counterfactuality in languages such as Hindi.

Let us consider the Hindi verbal system as depicted in Table 8. As can be seen, Hindi has only three markers of tenses, namely *hai* ‘is’, *thā* ‘was’ and a suffix, *-gā*, which marks the future tense. The rest of the entire verbal system is structured around the aspectual opposition: perfectivity versus imperfectivity. The imperfective aspect marker, namely *tā*, is the marker of imperfectivity throughout the language, although by default in certain contexts it marks the habitual aspect as well.

**Table 8:** A complete inflectional inventory of Hindi verb *calnā* ‘to walk’ or ‘to move’ in combination of the Hindi TAM elements (grammatical accord: 3rd person, masculine and singular)

Non-aspectual	Moods										
	Root subjunctive	<sup>1</sup> <i>cale</i>									
	Future	<sup>2</sup> <i>cale-gā</i>									
	Imperative	<sup>3</sup> <i>cal/ calo/ calie</i>									
Aspectual		Imperfective						Perfective			
		Habitual			Progressive						
		ROOT	HAB	AUX	ROOT	PROG	AUX	ROOT	PFV	AUX	
		<sup>4</sup> <i>cal-</i>	<i>tā</i>	∅				<sup>5</sup> <i>cal-</i>	<i>ā</i>	∅	
	Indicative	<sup>6</sup> <i>cal-</i>	<i>tā</i>	<i>hai</i>	<sup>7</sup> <i>cal</i>	<i>rahā</i>	<i>hai</i>	<sup>8</sup> <i>cal-</i>	<i>ā</i>	<i>hai</i>	
		<sup>9</sup> <i>cal-</i>	<i>tā</i>	<i>thā</i>	<sup>10</sup> <i>cal</i>	<i>rahā</i>	<i>thā</i>	<sup>11</sup> <i>cal-</i>	<i>ā</i>	<i>thā</i>	
	Subjunctive	<sup>12</sup> <i>cal-</i>	<i>tā</i>	<i>ho</i>	<sup>13</sup> <i>cal</i>	<i>rahā</i>	<i>ho</i>	<sup>14</sup> <i>cal-</i>	<i>ā</i>	<i>ho</i>	
	Presumptive	<sup>15</sup> <i>cal-</i>	<i>tā</i>	<i>ho-gā</i>	<sup>16</sup> <i>cal</i>	<i>rahā</i>	<i>ho-gā</i>	<sup>17</sup> <i>cal-</i>	<i>ā</i>	<i>ho-gā</i>	
	Counterfactual	<sup>18</sup> <i>cal-</i>	<i>tā</i>	∅							
		<sup>19</sup> <i>cal-</i>	<i>tā</i>	<i>ho-tā</i>	<sup>20</sup> <i>cal</i>	<i>rahā</i>	<i>ho-tā</i>	<sup>21</sup> <i>cal-</i>	<i>ā</i>	<i>ho-tā</i>	

Moreover, this Hindi imperfective marker *tā* does not signal any trace of the habitual aspect in the other contexts in which it is frequently employed, as can be seen in (22a), (22b), (22c) and (22d). Thus, it is wrong to claim that *tā* is a marker of habitual aspect.

- (22) a. rotā huā laṛkā  
cry-IMPFV be-PFV boy  
‘The boy who was crying ...’ ≠ ‘The boy who cries habitually...’
- b. bhāgtā huā cor ...  
flee-IMPFV be-PFV.M.SG thief  
‘The fleeing thief ...’ ≠ ‘The thief who flees habitually ...’
- c. Ram=ne cor=ko bhāgte hue dekhā  
Ram=ERG thief=ACC flee-IMPFV.OBL be-PFV.OBL see-PVF  
‘Ram saw the thief fleeing’ ≠ ‘Ram saw the thief who flees regularly.’
- d. Ram=ne bhāgte hue cor=ko dekhā  
Ram=ERG flee-IMPFV.OBL be-PFV.OBL thief=ACC see-PVF  
‘Ram saw a thief fleeing’ ≠ ‘Ram saw a thief who flees regularly.’

Now, let us consider the question of aspect stacking as discussed in Karawani (2014). Unfortunately, the account she provides is only partial. Contrary to her claim that it is limited to counterfactuals only (2014: 24), aspect stacking is a widespread phenomenon outside of the realm of conditionality, abundantly attested in factual expressions as well. Consider the following examples:

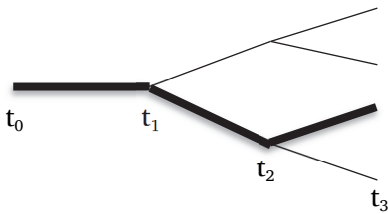
- (23) a. yah baccā hamesā rotā rahtā hai  
 this child always cry-IMPV stay-IMPV AUX.PRS  
 ‘This child keeps on crying all the time.’
- b. Ram bāzār jātā rahtā hai  
 Ram market go-IMPV stay-IMPV AUX.PRS  
 ‘Ram keeps on going to the market.’
- c. pichle sal Ram aksar mandir jāyā kartā thā  
 last year Ram often temple go-PFV do-IMPV AUX-PST  
 ‘Last year Ram used to go to the temple (very often).’
- d. Ram kulfi khātā jā rahā hai  
 Ram ice cream eat-IMPV go stay-PFV aux-PRS  
 ‘Ram continues (keeps on) eating the ice cream.’

As can be seen from examples (23a)–(23d), contrary to Karawani’s affirmation, aspect stacking is the only tool for obtaining iterativity in Hindi. That said, I believe that this paper is not the right place to discuss all the characteristics of the aspect stacking in Hindi nor to illustrate the perfective-imperfective dichotomy in the language. Nevertheless, to sum up, it can be safely affirmed that the imperfective marking suffix *-tā* is employed in at least four different contexts in Hindi: (1) it is suffixed to the verbal root, where it expresses the imperfective aspect and then by default the habitual aspect; (2) it is exploited to obtain imperfective adjectival and adverbial participles; (3) it is employed throughout the language to express different types of iterativity via aspect stacking; and (4) it is utilized as a modal to express counterfactuality. We thus maintain that the imperfective aspect, not the past tense, is the integral element of Hindi counterfactuals, and that the imperfective/perfective aspectual dichotomy is sufficient to provide an explanation for all the issues concerning counterfactuality in Hindi.

Now, in order to see what an aspect-based branching might look like, let us consider a Hindi version of the example (19) which was analyzed by Tedeschi (1981) in his account of his Branching-futures model:

- (24) (agar) Germany=ne England=par hamlā kiyā hotā  
 (if) Germany=ERG England=on attack do-PFV.M be-IMPV.M  
 to vo jīt gayī hotī  
 then she win go-PFV.F be-IMPV-F  
 ‘If Germany had invaded England, they (she) would have won the war.’

Let us use the same Branching-futures tree to illustrate this:



**Figure 2:** Tree representing Branching-aspects model

Assume that we are at  $t_3$ , and that at  $t_2$ , for whatever reason, the action – that could have given Germany a win – was not carried out or called off. In the alternative branch – which is expressed via perfectivity, not tense, in Hindi – Hitler did indeed accomplish the task and win the war. Thus,

- (25) It was the case: if Germany completes invasion of England, it will be the case: Germany accomplishes the task of winning the war.

At this point, the tense-theorists might argue that, since the points in time in the diagram, namely  $t_1$ ,  $t_2$  and  $t_3$ , are expressed through tenses, how can an aspect-based model deal with the question of distancing one event from another – an issue that can be dealt with properly only by tenses? Well, if we look at the English example closely, it is the perfective aspect (or perfect) – not the simple past tense – that provides the distancing between the two past actions in example (19). Also note that only four out of thirteen English tenses listed by Reichenbach (1947: 297) can be considered pure (i.e. aspectless) tenses: *simple past* (E,R–S), *simple present* (S,R,E), *simple future* (S–R,E and S,R–E). The remaining nine tenses are obtained in combination with aspect: *anterior past* or *past perfect* (E–R–S), *posterior past 1* (R–E–S), *posterior past 2* (R–S,E), *posterior past 3* (R–S–E), *anterior past* or *present perfect* (E–S,R), *anterior future* or *future perfect 1* (S–E–R), *anterior future* or *future perfect 2* (S,E–R), *anterior future* or *future perfect 3* (E–S–R) and *posterior future* (S–R–E). Thus, a closer look reveals that the role played by aspects in counterfactuals has not yet been fully explored. In an aspect-based model, the anteriority of an imperfect action can be determined by the speech time. Furthermore, in an aspect-based model, a perfective aspect may indicate completion of action before the Speech time or Reference time (i.e.  $E > R > S$  or  $E, R > S$ ) whereas an imperfect aspect indicates noncompletion of action either at the Reference time or the Speech

time. Obviously, E can overlap with the speech time, or follow it, depending on the aspect.

On the question of the crucial role played by the grammatical aspect in counterfactuals, Arregui (2005, 2007, 2009) develops a new line of research and discusses the following examples from English in support of her approach. According to her proposal, aspect plays a central role in counterfactuality, even in English, where aspect is not exhibited systematically:

- (26) You: Could you look after my plants next week while I am away?  
 Me: Of course, but I am rather nervous. If your plants died next week, I would be very upset.
- (27) You: Don't worry about looking after my plants next week. They died.  
 Me: I am sorry, but also a bit relieved. If your plants had died next week, I would have been very upset.  
 Me: I am sorry, but also a bit relieved. #If your plants died next week, I would be very upset.
- (28) Your plants do not have enough light. If they had enough light, they would be fine.

Regarding the question of the simple past subjunctive conditionals in examples (26) and (27), Arregui (2005, 2007, 2009) observes that the sentence *If your plants died next week, I would be very upset* is fine in (26), but not in the second option in (27). According to Arregui, the second option in (27) is anomalous due to aspect restrictions. The past perfect subjunctive conditionals in (28), on the other hand, can always be counterfactual, regardless of the type of predicate in their antecedent. Needless to say, we cannot go into the details of this proposal in this paper, despite the fact that it is well worth considering.

## 5 Degrees of hypotheticality

Recognizing the difficulty of using the traditional terminologies such as open versus closed, real versus unreal or real versus hypothetical for a cross-linguistic research, Comrie (1986: 88) claims that hypotheticality is a continuum and therefore cannot be classified according to any bipartite or tripartite divisions. As we have already mentioned in the previous sections, it is difficult to find two languages with a correspondingly equal number of classes of conditionals. For example, not many Indian languages possess two separate categories for expressing the difference between the following two English conditional sentences:

- (29) a. If you give me a kiss, I'll buy you a beer.  
 b. If you gave me a kiss, I'd buy you a beer. (from Comrie 1986)

This could be true of many not thoroughly studied languages. In this scenario, a cross-linguistic investigation of conditionals becomes extremely difficult. I believe that to gather data for a sound analysis of conditionals in a less-commonly investigated language, it is necessary to determine the exact number of conditional types by looking into the speaker and hearer's epistemic stock. In addition, one has to begin with just two basic categories of conditionals which are unanimously considered to be universal and put off the third category, namely "If X happened, Y would happen" for subsequent investigation:

Cross-linguistic evidence suggests that "an awareness of the conditional", an ability to say "what if ...?" or "if ... then...", is indeed a human universal. I submit that "an awareness of the counterfactual", an ability to say "had this not happened, that wouldn't have happened", may also be a human universal, a vital path in the human mental process, an indispensable element of human language and cognition.

By contrast, cross-linguistic evidence appears to suggest that the "hypothetical conditionals", situated half-way between the conditionals of real possibility and counterfactuals, (e.g. "if this happened, that would happen"), may be a language-specific phenomenon, and not a universal feature of human language and human thought. (Wierzbicka, 1997: 52)

Thus, for any cross-linguistic investigation, it is imperative to look beyond the use of tenses in the English language. Following the logic of English tenses for any linguistic survey will inevitably lead only to a partial understanding of the wider situation. For example, the use of the English future tense in protasis is limited to such rare cases as the following:

- (30) A: The Universe won't come to an end for several million years yet.  
 B: If it won't come to an end for several million years yet, we'll still be able to go to Florida this winter. (example from Comrie 1986)

In contrast, in most of the languages spoken in South Asia, the use of future tense in protasis is a common phenomenon. Similarly, most of the examples of English conditionals which exhibit the present indicative tense are rendered in many languages, including Hindi, through subjunctive mood (Oranskaia 2005). Hence, we believe that the frequently used terms – indicative and subjunctive – are misleading for any serious cross-linguistic research. Following Wierzbicka, we believe that we should begin any cross-linguistic survey by discovering two basic categories of conditionals which could be called: contingent conditionals, and counterfactual conditionals.

## 5.1 Types of speaker's epistemic stances in factual expressions

We believe that before looking into the controversial question of the exact number of conditional types to be investigated in a particular language and the various degrees of hypotheticality expressed thereby, one needs to thoroughly examine the tense-aspect-mood system of that language. To this end, some generalizations concerning the speaker's epistemic stances are of utmost importance. We propose that like all sentences of a natural language, conditionals should be analyzed in light of the speaker's communicative stance. However, before we embark upon a general typology of conditionals (i.e. non-factual expressions), we need to establish a brief sketch of epistemic stances in factual expressions in a language. The speaker's communicative epistemic stances and their respective modal meanings can be described in the following manner (Sharma 2002):

- (31)  $K_s \Box p$ : "In order for you to take notice of it and act accordingly, I would like to communicate to you that, for all I know, it is necessarily  $P$ ." In other words, it is not possible not- $P$  (i.e.  $K_s \neg \Diamond \neg P$ ).

Almost all natural languages exhibit this epistemic stance of the speaker through "indicatives" which may varyingly be loaded with different aspectual morphologies marking habitual, progressive and perfective, etc. Using Reichenbachian terminology, the aspectual characterizations can have various representations: past habitual or progressive  $E, R > S$  [i.e. 'It used to rain last month', 'It was raining this morning', etc.]; past perfective:  $E > R > S$  [i.e. 'It had rained a lot before I went out', etc.], present habitual or progressive  $S, R, E$  ('It rains everyday in Ireland', 'It is raining in Dublin right now, respectively), present perfective ('It has rained a lot this morning in Dublin') and future  $S < E, R$ , ['It will rain tomorrow in Dublin'], etc.

- (32)  $K_s \Diamond p$ : "In order for you to take notice of it and act accordingly, I would like to communicate to you that, for all I know, it is possibly  $p$ ." Thus, it is not necessarily  $P$  and it is not necessarily not- $P$ : (i.e.  $K_s \neg \Box P \wedge K_s \neg \Box \neg P$ ).

Generally, natural languages do not need to mark this epistemic stance of the speaker in their grammar. It can be paraphrased in the following manner: The speaker knows that it is possible that it rains in Dublin at any time. We are not aware of any language that expresses this epistemic stance through grammatical means, although some languages, such as Hindi, express this epistemic stance through an iterative habitual aspect.

- (33)  $B_s \Box p$ : In order for you to take notice of it and act accordingly, I would like to communicate to you that, although I don't know that  $P$ , I nonetheless believe that it is necessarily  $P$ . This means, the speaker believes that it is not possible not- $P$ . (i.e.  $B_s \neg \Diamond \neg P$ ).  
 Many languages, such as English, exhibit this epistemic stance through modals such as must, may, might, etc. [E.g. 'It must be raining every day in Dublin in September', 'It must be raining in Dublin right now', etc.] In many languages, such as Hindi, this epistemic stance can come well supplied with morphological devices that express various aspectual elements in line with its tense-aspect system. For example, a Hindi speaker can exhibit this epistemic stance with three distinct aspectual markings: habitual, progressive and perfective.
- (34)  $B_s \Diamond p$ : In order for you to take notice of it and act accordingly, I would like to communicate to you that, although I don't know that  $P$ , I nonetheless believe that it is possibly  $P$ . Thus, the speaker believes that not necessarily  $P$  and not necessarily not- $P$  (i.e.  $B_s \neg \Box P \wedge B_s \neg \Box \neg P$ ). Many languages have morphological means to express this epistemic stance which is often called subjunctive (also labelled optative in certain languages. For example, 'It may rain in Dublin tomorrow') which may also be loaded with markers of various aspects such as habitual (i.e. 'It is possible that it rains daily in Dublin this week'), progressive (i.e. 'It is possible that it may be raining in Dublin right now') and perfective (i.e. 'It may have rained in Dublin this morning', etc.).

## 5.2 Types of speaker's epistemic stances in conditionals

Having illustrated the speaker's epistemic stances in factual statements (31)–(34), we may now turn to conditionals to discuss the two major classes of conditionals, namely, contingent conditionals (also known as indicative conditionals) and counterfactuals (also known as "subjunctive conditionals"). Other classes of conditionals can be discussed in a cross-linguistic survey following the same line of research.

### 5.2.1 Conditional type 1 (the lowest degree of hypotheticality)

Obviously, one may gather different data-sets from a language which may seem to belong to the first type. However, we propose that for an in-depth cross-linguistic survey, it is important to look into a small specimen of conditional only. To this end, let us consider the following example in (35) in light of the epistemic stock of the speaker and the hearer as presented in (36):



- (35) If Mary invites John, he will go to her party.  
 (36) Speaker and Hearer's epistemic stock:  
 $\alpha$  = Mary's Party will take place tomorrow (i.e.  $S < E, R$ )  
 $\beta$  = Mary hasn't extended an invitation to John yet.  
 $\gamma$  = Mary will extend an invitation to John.  
 (37) (a)  $K_s \alpha \wedge K_s K_h \alpha \vee B_s K_h \alpha$   
 (b)  $K_s \beta \wedge K_s K_h \beta \vee B_s K_h \beta$   
 (c)  $B_s \gamma \wedge B_s \neg K_h \gamma$

Thus, in view of the Speaker-Hearer's epistemic stock in (36), the conditional statement in (35) will have the speaker's epistemic stance as formulized in (37) which reads as follows: (a) the speaker knows that *Mary's party will take place tomorrow* and also knows that hearer knows about it. Or, the speaker at least believes that the hearer knows that *Mary's party will take place tomorrow*; (b) the speaker knows that *Mary hasn't extended an invitation to John yet* and knows that the hearer also knows about it. Or, the speaker at least believes that the hearer knows that *Mary hasn't extended an invitation to John yet*; and (c) the speaker believes that *Mary will extend an invitation to John* and believes that the hearer does not know that that *Mary will extend an invitation to John*.

Thus, in view of the Speaker-Hearer's epistemic stock in (36), the first type of conditional in (35) will have the following modal meaning: "In order for you to take notice of it and act accordingly, I would like to invite you to evaluate Q (i.e. 'John will go to Mary's party') in light of P (i.e. 'Mary invites John to her party'). In other words, the speaker does not believe that the hearer knows that Mary will invite John to the party and thus wants to inform him that John's going to the party is contingent upon Mary's invitation to John.

### 5.2.2 Conditional type 2 (the highest degree of hypotheticality)

This class of conditionals are the opposite of type 1 and are called counterfactuals in that the speaker invites the hearer to evaluate the counter to fact conditions.

- (38) If Mary had invited John, he would have gone to her party.  
 (39) Speaker and Hearer's epistemic stock:  
 $\alpha$  = Mary's party took place yesterday [i.e.  $E, R > S$ ]  
 $\beta$  = Mary didn't extend an invitation to John.  
 $\gamma$  = John didn't go Mary's party.  
 (40) (a)  $K_s \alpha \wedge K_s K_h \alpha$   
 (b)  $K_s \beta \vee B_s \beta \wedge K_s \neg K_h \beta \vee K_s \neg B_h \beta$   
 (c)  $K_s \gamma \vee B_s \gamma \wedge K_s K_h \gamma \vee B_s K_h \gamma$

Thus, in view of the Speaker-Hearer's epistemic stock in (39), the conditional statement in (38) will have the speaker's epistemic stance as formulized in (40) which reads as follows: (a) the speaker knows that *Mary's party took place yesterday* and also knows that hearer knows that *Mary's party took place yesterday*; (b) the speaker furthermore either knows or believes that *Mary didn't invite John to the party*. He also knows that the hearer either does not know or does not believe that *Mary didn't invite John to the party*; in addition, (c) the speaker either knows or believe that *John didn't go to Mary's party*, and the speaker knows or believes that the hearer knows that *John didn't to Mary's party*. Equipped with this epistemic stock, the speaker invites the hearer to consider  $\beta$  as the sole reason for  $\gamma$ , and suppose a world in which both  $\beta$  (i.e. antecedent) and  $\gamma$  (i.e. consequent) were contrary to the fact.

## 6 Conclusion

In the preceding sections, I have tried to evaluate the tenability of Greenberg's Universal of Word Order 14 in relation to different classes of languages, and argued that P-Q is the only ordering acceptable in conditional statements. It has been affirmed that the Q, P ordering attested in some languages is not due to any kind of afterthought from the speaker (e.g. to place P after Q in order to avoid the risk of making a factual statement, as suggested by Comrie, 1986), but the result of a discourse-related (Akatsuka 1986) requirement (e.g. an apodosis is fronted if that is the focus of the discourse), some pragmatic universals (e.g. fronting an apodosis in imperative conditionals is a universal pragmatic phenomenon) and also other factors which are language specific. The classification of language-specific features across different classes of languages is a large topic that requires further in-depth research and a detailed survey of less-commonly scrutinized languages. I have also tried to show that, contrary to widely held belief, the so-called apodosis marker, such as *then* in English, is in reality related to the protasis rather than to the apodosis. When it comes to the types of conditionals found in different languages, there seems to be only two universal categories: the so-called indicative conditionals, which we would prefer to call contingent conditionals, and counterfactual conditionals. Languages that exhibit more than two types of conditionals, such as English, French and Italian, among many others, have developed sophisticated morphological tools through which the speaker can express his/her epistemic stance in the protasis. In addition, as far as the time reference in counterfactuals is concerned, I have argued that the past tense reference is not sufficient on its own for the formation of a unified account of tenses, as in many languages, it is the verbal aspect that is responsible for obtaining counterfactuals.

## Abbreviations

ACC = accusative case; ADV = adverb; COND = conditional; CPM = complementizer; DAT = dative case; ERG = ergative case; F = feminine gender; FUT = future tense; GEN = genitive case; HAB = habitual aspect; IMPFV = imperfective aspect; LOC = locative case; M = masculine gender; NOM = nominative case; PART = particle; PFV = perfective aspect, perfect tense; PL = plural number; POSS = possessive case; PROG = progressive aspect; PRON = pronoun; PRS = present tense; SUFF = suffix

## Acknowledgements

I am deeply indebted to my mentors, Stefan Kaufmann and David Over, for their unstinting support and active encouragement (both intellectual and personal) without which I would not have been able to finish this article. Being primarily a linguist, I willingly and gratefully accepted their advice on a number of different issues. Obviously, any errors in the paper are my own. I would also like to thank friends and colleagues from different universities for their help with the data judgement: John Lowe (Oxford), Tanmoy Bhattacharya (Delhi), K.V.R. Subbarao (Delhi), Amba Kulkarni (Hyderabad), Anuradha Sudharsan (Hyderabad), Prashant Pardeshi (Tokyo) and Massimo Vai (Milan). Again, none of these should be held responsible for any inaccuracies in the paper.

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