

English from Hindi viewpoint: A Paaninian Perspective

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Introduction:

On the one hand with the world wide web spreading all over the world, information is now available at the click of a mouse. However, most of the information is in English. In India hardly 5-10% of the population can understand English. Hence, if India has to take real advantage of the new technology, it is necessary to make this information available to the Indians in Indian languages. On the other hand, it is well known that Fully Automatic High Quality Machine Translation is impossible in near future. But at the same time, it is possible to build systems that reduce the language barrier[2]. Experiments have shown that English-Hindi anusaaraka, as a tool to access English text has been very useful[1]. Since anusaaraka produces an output that follows the grammar of the source language, it is necessary for a user to 'learn' the 'contrastive grammar' between the source and the target language. A courseware, explaining the differences between English and Hindi will therefore be needed to access anusaaraka.

It has been observed[3,4] that Paninian way of analysis pays attention to the information coding. How much information is coded, where it is coded and how it is coded are the questions that are crucial from contrastive analysis point of view. In this paper we use the Paaninian way of analysis to discover the structural differences between English and Hindi. This study will not only be useful for a anusaaraka reader, but also to the Machine Translation community working on English-Hindi translation systems, since it will shade light on the limitations of Machine Translation between English and Hindi.

Traditional view:

The structural differences between English and Hindi are mostly attributed to the difference in their word orders. Language typologists[8] classify English as an SVO language and Hindi as an SOV language. However comparing English and Hindi on the basis of word order is like comparing apples with oranges! The reason is: English uses position to code crucial information of the relation between the words in a sentence. So when one says English is an SVO language, one is asserting a fact about the encoding of

grammatical relations, viz. subject and object, in English. The position immediately preceding a verb marks the subject and the one immediately following marks an object. On the other hand, Hindi is a relatively free word order language. Hence, when Hindi is termed as a SOV language, one is just stating a statistical fact about the order of words in a typical Hindi sentence!

To make the point clear, following two English sentences have exactly opposite meanings.

Rats kill cats

Cats kill rats

whereas, the following two Hindi sentences with similar change in the order of words as above, have the same meaning (ignoring the topicalisation, of course).

H: raama phala khaataa hai.

gloss: Ram fruits eats.

E: Ram eats fruits.

H: phala raama khaataa hai.

gloss: Fruits Ram eats.

E: Ram eats fruits.

In the following sections, we investigate the reasons behind the structural differences between these two languages from information coding point of view. In the second section, on the basis of the basic structure for declarative sentences in English and Hindi, we conclude that English does not have a morpheme for an accusative marker. The missing accusative marker is compensated by the subject position in English. As a consequence, this gives rise to some structural differences in the two languages. The third section discusses these structural differences. In the fourth section, it has been pointed out that, English does not have a morphological marker for marking the yes-no question. Therefore English resorts to the word order again. The structural differences arising because of this phenomenon are discussed in the fifth section.

Missing accusative marker:

Look at the English sentence

Rats kill dogs. (1)

and its Hindi gloss

cuuhe maara{0} kutte. (2)

{Note: {0} stands for no overt suffix. There are many interpretations of {0} suffix in English, such as present tense marker, imperative, to-less infinitive, etc. One of them, which is relevant in this particular case is present tense marker. Thus, we may interpret the above Hindi gloss as

cuuhe maarate_haiM kutte.

}

Though this is not a grammatical Hindi sentence, still, if a Hindi reader is asked to interpret this sentence, he will interpret this as

H: kutte maarate_haiM cuuhoM_ko. (3)

E: Dogs bite rats.

which is exactly the reverse of what is being said in English!

Why does this happen? First let us try to understand the reason for why a Hindi reader analyses it in this way, and later we will see what mechanism in English triggers the desired meaning.

Arguments by Hindi reader for this interpretation:

The Hindi sentence (2) is ungrammatical, because Hindi requires an accusative marker (ko) to mark the karma role. However, Hindi also has a tendency to drop the karma vibhakti, wherever there is a possibility of recovering the information from other sources, such as world knowledge. For example, following sentence

H: raama phala khaataa hai. (4)

gloss: Ram fruit eats.

E: Ram eats fruits.

does not have an accusative marker with phala. In spite of this, a Hindi reader appealing to the world knowledge (in this case the yogyataa or competency), interprets this sentence as raama is the kartaa of the action of eating and phala is the karma of the action.

At the same time, Hindi obligatorily requires an accusative marker, if anything against yogyataa is to be communicated, as is obvious from the following Hindi sentence.

lataa sharaaba nahiiM piitii, sharaaba lataa ko piitii hai. (5)

[Note the marker 'ko' with lataa, to mark lataa as a karma]

Following the same argument, since sentence(2) does not carry any explicit accusative marker to mark the karma, Hindi reader appeals to his world knowledge, and based on the yogyataa, since the dogs have yogyataa to kill the rats and not the other way, interprets the sentence as (3).

Unlike Hindi, English does not have an explicit morpheme for accusative marker. Rather it codes the information indicating grammatical relations in subject and object positions. So the natural question is, which position is crucial, the subject position or the object position or both? Or in other words, what is invariant, the S-V order or the O-V order or the S-V-O order?

Initial Hypothesis (S-V-O order):

Both the subject as well as object positions carry crucial information, or the S-V-O relation is invariant in English.

However, we come across such sentences as

Who likes sweets? Sweets, I like.

(6)

Mrs. Venables turned a little pale.

Lord Peter presented no difficulties,
but Bunter she found rather alarming.

(source: D. Sayers, The Nine Tailors)

where the object is in topic position, typically either to contrast or to maintain a topic.

Therefore, in this case, the information that sweets is an object of the verb like, is not coded in position or the order. In other words, the orders S-V-O as well as V-O are not invariant.

Revised Hypothesis (S-V order) :

This leads us to reframe the observation as, It is the subject-verb order which is invariant. Objects may move around. But life is not simple as is expected. There are examples showing movement of subject also!

Here are the examples:

Uneasy lies the head that wears a crown.
Never was the sea so calm!
Here comes the bus! (7)
On the bed, hung a mosquito net.

In the above examples, *the head*, *the sea*, *the bus* and *a mosquito net* are the subjects of the verbs *lies*, *was*, *comes*, and *hung*, and not the words that precede the verbs.

However, in all these examples, the verb is monovalent. That is they have an expectancy of only one argument(kaaraka), which agrees with the verb in number and person.

therefore, it's position in a sentence is not crucial. However, in case of transitive verbs, there are two arguments, and hence it is necessary to mark at least one of them. From the above examples, what we observe is, in case of transitive verbs, subject is always to the left of the verb, or in other words, S-V order is invariant!

There are evidences, which go against this hypothesis also. Look at [10]

Something had to give. And *give it* did.

Last October our good friend in South Africa,
wanted to come to England this year and
come he did, with his wife Annie.

We all said she was bound to leave him, and *leave him* she did. (8)

She could only hope that Harriet was mistaken in his feelings...
Wish it she must, for his sake... (J. Austen, Emma)

Ride in a taxi with Pamela and Bredon *he* could not, even if it
meant losing her forever... (D. Sayers, Murder must Advertise)

In all these examples, the subject is after the verb phrase! But at the same time, we also note that subject is followed by an auxiliary! So finally it is the subject-auxiliary sannidhi (proximity) that is invariant in English. The normal sannidhi (proximity) between auxiliary verbs and the main verb gets violated in English, and a new sannidhi is created between a subject and an auxiliary verb.

This leads to a concept of 'Subject Position' - a position which is to the immediate left of the auxiliary verb, or the main verb (in case auxiliary verb is absent). And thus, we revise

our observation as

Final Observation:

In case of transitive verbs, the missing accusative marker in English has been compensated by the Subject Position. Since English codes crucial information in subject position, this subject position can not be empty. This constraint then leads to many consequences that lead to more structural differences between English and Hindi as explained below.

Consequences of missing accusative marker:

a) Difference in word order:

Major consequence of coding the information in position is reflected in the difference in word order.

i) Hindi has post positions, English has pre-positions.

e.g. at the door -> daravaaje_para

Leaving apart the subject position, the remaining part of the sentence of English is exactly the mirror image of the corresponding Hindi sentence structure.

e.g. look at the following English sentence and its Hindi translation.

<i>E:</i>	<i>There</i>	<i>is</i>	<i>somebod y</i>	<i>knocking</i>	<i>at</i>	<i>the</i>	<i>door</i>
Gloss:		hai	koi	khatakhat aataa huua	para	--	daravaaje

< -----

H: daravaaje para khatakhatataataa_huua koi hai.

ii) English uses particles to give different shades of meaning to a verb. These particles are in post verb position, whereas the upasargas in Sanskrit (and in Hindi also) have the same role, but are used as prefixes. For example,

E: look at, look for, look after, etc.

H: aahaara, vihaara, prahaara, etc.

iii) The order between main verb and the auxiliary is reversed. In Hindi the verb groups are formed by the main root followed by its suffixes, as in jaa raha hai. However, in English the order is: auxiliary verbs followed by the main verb as in is going.

iv) It should be noted that the reversal is not everywhere.

For example, in case of word formation, at morphological level, the order is still root or pratipadika followed by a suffix, as we see in the words going, goes, chairs, etc. Similarly

in case of noun groups, the relative order of adjective and noun is same as in Hindi. For example: the red book, and laala pustaka.

b)Subject sharing (gapping) :

English and Hindi exhibit different behaviour in the sharing of kaarakas. This may lead to improper or mis-understanding of English sentence by Hindi native.

For example, consider the sentence

E: Mohan dropped the melon and burst. (9)

The Hindi gloss of this is

Gloss: mohana ne giraayaa tarabuuja aura phutaa. (10)

The kartaa of phutanaa is missing, and hence appealing to the yogyataa, a Hindi reader interprets this as

H: mohana ne tarabuuja giraayaa aura tarabuuja phutaa. (11)

[Note: Hindi, unlike English, does not have a subject sharing rule. Hindi allows such usages as

raama ne subaha kapade dhoye aura dopaharataka sukha bhii gaye.

In this sentence, the kartaa in the second sentence (kapade) is same as the karma in the previous sentence.]

whereas the English sentence (9) means

Mohan dropped the melon and Mohan burst. (12)

Though this sentence may sound senseless to a English reader, still the reader can't get any meaning from this sentence, other than the above one. To get the other meaning viz. that the melon burst, English has to use another construction viz.

Mohan dropped the melon and it burst. (13)

c) extra overheads:

Since English codes information in Subject Position, and also in subject-auxiliary order (see sec 5a), Subject position can't be empty. This forces English to bear an extra overload of dummy it and existential there to fill the Subject Positions.

i) Dummy/expletive it:

Consider the following English sentences

It is raining. (14)

It is very hot outside. (15)

and their Hindi translations

baariisha ho rahii hai. (16)

baahara bahuta garamii hai. (17)

Hindi translations do not have any counterpart of the dummy it. This it is termed as expletive or dummy it. As the name implies this it does not carry any information, and is just a place holder or a stand-by.

ii) Expletive There:

Consider the following sentences

There are flowers in the garden. (18)

There could have occurred several riots. (19)

There are thought likely to be awarded several prizes. (20)

In these sentences, the subject position is occupied by the word there and the word with which verb shows agreement (*ukta*) is moved away from the subject position. This there is not the adverbial there, since one can say

There are flowers there.

The second there in the above sentence is an adverbial there.

Hindi translations of above sentences are

bagiice_meM phuula haiM. (21)

kaii daMge ho_sakate_the. (22)

kaii pAritoshikoM kaa vitaraNa hone kii
saMbhaavanaa vyakta kii jaa rahii hai. (23)

In Hindi translations we do not see any counterpart of English there.

There in all these cases is also called an existential there, since it expresses the existence or appearance.

Why does English require this existential there?

The words or phrases that are to be focussed are normally moved into a focus position at the front of a clause in order to highlight it. When a verb is to be focussed, it is not possible to bring it to the front, since then either the subject position will be empty or it will be an interrogative sentence. Hence in such cases, the subject position is filled with an expletive there.

It is interesting to note that there are certain transitive verbs which use 'expletive there'.

For example,

There entered a hall an ugly old man.

This there thus serves as a focussing element for expressing the 'factuality' or 'happeningness' of the event.

d) Subject-Subject raising:

Since the dummy it does not carry any lexical information, it is an extra overhead. So there is a tendency to drop it whenever such an opportunity exists. This is natural and consistent with the principle of economy. For example, consider the following English sentences.

It seems that the boys have eaten fruits. (24)

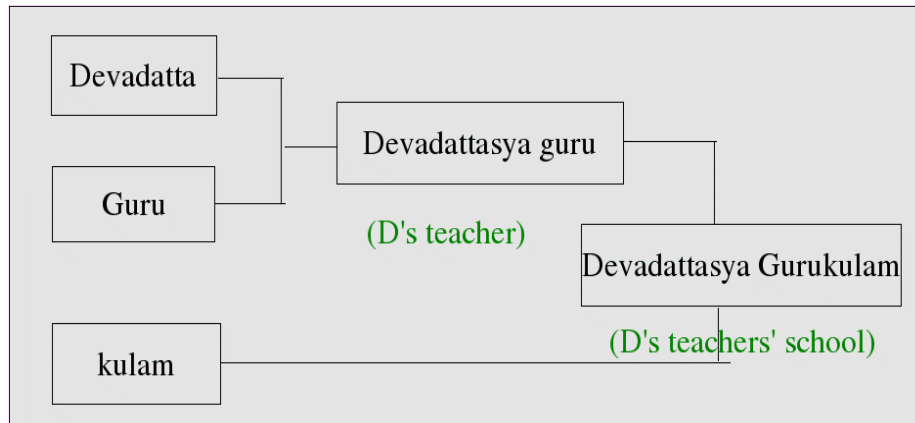
The boys seem to have eaten fruits. (25)

As the subject in the subordinate clause has been moved to the subject position of the main verb, this phenomenon in English is known as subject-subject raising in western grammar,

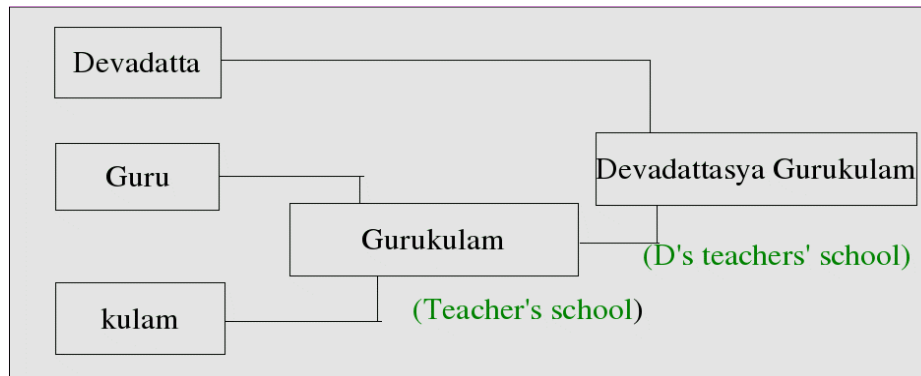
This phenomenon is purely structural/syntactical and has nothing to do with the semantics. Once the subject of the subordinate clause is moved to the subject position of the main verb, the main verb shows agreement with this noun. Thus we see that, in sentence(25), the boys is in the subject position of seem and also is *ukta*, as it shows agreement with the verb seem. However, semantically, the boys is not a kaaraka for the verb seem. It is the kartaa of eat!

The sentence structure thus seems to be incompetent (*asamartha*) to convey the desired meaning. Or in other words, the sentence has some syntactic operations that do not

convey any semantic connections. But then, how is that a English reader does not find such constructions odd? or how is that the sentence is acceptable to the native speaker? How does a language allow proper communication in spite of apparent incomprehensibility of the sentences at structural level to convey the desired meaning? It is the 'gamakatva' (arthabodhakatva, ability to convey the desired meaning) that takes care of proper communication. Patanjali has discussed this aspect under the commentary of 'samārtha padavidhiḥ'(paanini: 2.1.1) He takes an example of Sanskrit compound 'devadattasya gurukulam' (school of D's teacher). Devadatta is related to guru. So semantically, it should be analysed as



However, its syntactic composition is



This is possible only because, the word 'guru' is saakaaMksha(having expectancy). Hence even if it joins with other word to form a compound, this 'saakaaMkshataa'(the property of having expectancy) makes it possible to convey the desired meaning. This 'saakaaMkshataa' is the 'gamakatva' which makes it possible to interpret the given compound properly.

On similar lines, in the case of (25) the verb eat requires a subject. But its subject position is empty. At the same time, seem does not need any subject, and its subject position is

occupied by the boys. And, the gamakatva is in the fact that seem does not require any subject, and expects only a clause following it.

So English native seems to push the occupant of the subject position of the verb seem to the right towards the first subordinate verb whose subject position is empty. Thus for a native English speaker, the subject position is more important than the agreement between the verb and the subject.

e) Exceptional Case Marking (Subject-Object raising):

Another phenomenon in English is raising of subject to object position or also termed as exceptional case marking.

Consider the sentence:

E: I want [him to go there]. (26)

gloss: maiM caahataa huuM usako jaanaaa vahaam (27)

From Hindi point of view, there are two problems in this sentence.

a) In Hindi, as in most Indian languages, in case of icchaarthaka verbs (indicating desire etc.), if the subordinate verb is in tumun, then it shares the kartaa with the icchaarthaka dhaatus. (samaanakartkeshu tumun, Paanini:3/3/158). Hence, to express a reading such as

I want [him to go there] (28)

wherein the kartaa of want is different from the kartaa of go, Hindi can not use naa_ke_liye (tumun) construction to convey this reading.

Hindi either uses a finite clause such as

maiM caahataa_huuM ki vaha jaaye (29)

or, uses non-finite clause (kridaMta construction) such as

maiM usakaa jaanaa caahataa huuM. (30)

b) Second problem with this construction is, this structure is inherently ambiguous.

Consider the sentence,

I want this pen to write. (31)

The most likely meaning is

I want [this pen] [to write] (32)

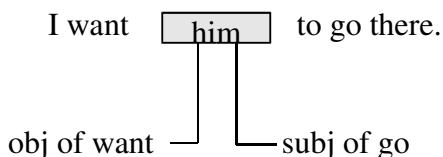
and not

I want [this pen to write] (33)

as in (28). It is the world knowledge which triggers the desired meaning.

Question is what phenomenon in English makes such constructions inherently ambiguous? Secondly why the 'he' which is the subject of 'go' has an accusative marker?

Answer to the first question is very simple. It is the subject position of the infinite verb which also happens to be the object position that makes the sentence inherently ambiguous.



This construction in western grammar has been termed as Exceptional Case Marking or raising to object phenomenon. He, which is at the subject position of go, gets case marked by the verb want. This is because, go not being in finite form, can not assign case to its arguments. Whereas, he being also in the object position of want, want can assign a case to he, making it him. Here it should be noted that the word 'him' should not be analysed as he + accusative marker. 'him' here is just an oblique case of 'he'. Thus, a verb is assigning case to something which is not its own argument. That is why such verbs are referred to as Exceptionally Case Marked verbs. This phenomenon is also sometimes referred to as subject-object raising, since the subject of the subordinate clause has been raised to the object position of the main verb. This explanation makes one feel that the sentence formation is 'asamartha', and in spite of it, a native speaker finds the sentence to be good.

So there should be some gamakatva because of which an English reader is able to get the correct meaning. This gamakatva is in the subject position of the verb go.

f) Tough movement:

There is a class of adjectives (tough, difficult, easy, hard, etc) which also exhibit a phenomenon of raising. This phenomenon is often referred to as tough movement. Look at the following pair of sentences.

It is hard to see John. (34)

John is hard to see. (35)

As is clear from the above example, the object (John) of the subordinate verb is moved to the subject position of the main verb (is) which was occupied by dummy it. This is again a case of asaamarthya, since there is an agreement between the occupant of subject position (John) with the verb (is), whereas the occupant of subject position is not the argument of the verb!

Not only the objects, but even the objects of prepositions can also move to the subject position. However, when the object of prepositions move to the subject position, the prepositions are left behind. This then gives rise to 'violation of normal sannidhi/expected proximity'. For example

This violin is tough to play these sonatas on. (36)

where, the normal sannidhi between preposition (on) and the noun (violin) is violated.

Further with the believe type of verbs, English allows constructions such as

John is tough to believe that University would fire. (37)

Students are tough to believe that University would fire. (38)

Here also, the agreement is just a structural requirement and does not carry any semantic information. The gamakatva is in the aakaankshaa of the adjectives tough and the verb in the subordinate clause.

g) Use of dummy 'do's in verb phrase deletion.

English uses dummy 'do's as place holders to mark the position of the verb in case of verb phrase deletion phenomenon. For example, look at the following pair of sentences

Ram met Shyam. Mohan did too. (39)

Ram will meet Shyam today. Mohan will too. (40)

In such cases, Hindi completely drops the verb phrase as in

raama milaa shyaama_ko. mohana bhii. (41)

raama milegaa shyaama_ko. mohana bhii. (42)

However, English requires dummy do or the auxiliaries to mark the subject. If the concerned auxiliary is dropped, then the English sentence will trigger different meanings as in

Ram met Shyam, and Mohan too. (43)

Ram will meet Shyam, and Mohan too. (44)

raama milaa shyaama_ko. mohana_ko bhii. (45)

raama milegaa shyaama_ko. mohana_ko bhii. (46)

Since English codes information of subadjacency in position, it is necessary to carry dummy or auxiliary verbs to mark the subadjacency of the noun. Or, in other words, in English the auxiliaries in the verb phrase deleted sentences are just place holders and do not have any content!

Missing yes-no interrogative marker:

Look at the following two sentences in English:

E: Ram is going to school. -- (47)

and

E: Is Ram going to school? -- (48)

One of the sentences is declarative whereas the other one is a yes-no question. If we look at the words in the sentences, they are same, except for the word order. So it is natural that the information of 'interrogativeness' or 'declarativeness' of the sentence is in the word order. There is no explicit morpheme to mark the interrogativeness.

From the Hindi translations of these sentences

H: raama skuula jaa rahaa hai. -- (49)

and

H: kyaa raama skuula jaa rahaa hai? -- (50)

it is clear that Hindi has an explicit word 'kyaa' to mark the 'yes-no' question. The counterpart of this morpheme is missing in English. As a consequence, English codes this information in word order.

Observation:

The missing marker corresponding to yes-no question is compensated by the 'subject-auxiliary verb inversion' in English. The consequence of this is that the normal sannidhi (proximity) between auxiliary verbs and the main verb is weakened, and a new sannidhi is established between the subject and the auxiliary verb.

Consequences of Missing yes-no interrogative marker:

a) Subject Position can't be empty:

For, if it were empty, it would not be clear whether the given sentence is interrogative or declarative.

b) Insertion of auxiliary do in interrogatives:

If a verb form does not involve an auxiliary verb, then a dummy 'do' is inserted, as shown below.

He goes to school. --(51)

Does he go to school? --(52)

Here 'goes' is split as 'does+go' by introducing an auxiliary do, and the auxiliary "does" then inverts with the subject to give an interrogative sentence (63).

Other cases of subject - Auxiliary inversion:

i) Wh questions:

The phenomenon of subject-auxiliary inversion is also observed in wh questions, where the wh element is brought forward to the topic position in order to focus. And hence, with an exception of subject wh questions (where the wh is already in focus), the wh questions also show a 'subject auxiliary inversion'. Here are some examples:

Whom did Ram kill? --(53)

Where did Ram go? --(54)

with an exception of wh-questions on subject, as in

Who killed Ravana? --(55)

Further in case of wh questions on NPs which are objects of a preposition, the prepositions normally are not moved along with the wh elements, as in

Who did Ram talk to? --(56)

English does allow pied piping wherein the sandhi between prepositions and its object is intact as in

To whom did Ram talk to? --(57)

However, this order weakens the focus on wh element. The preferred order in English, is (56) and not (57).

ii) inversion in tagged questions :

English does not have any separate morpheme for tagged questions, and hence again, it resorts to the subject-auxiliary inversion, as in

He has gone to Mumbai. Isn't he? --(58)

He won't win. Will he? --(59)

iii) inversion in other constructions:

Phenomenon of subject auxiliary inversion is seen in other constructs also.

Ram has gone to the market. So has Shyam. --(60)

Only then, did he understand the joke. --(61)

No other colleague, would I trust. --(62)

Suffice it to say that ... --(63)

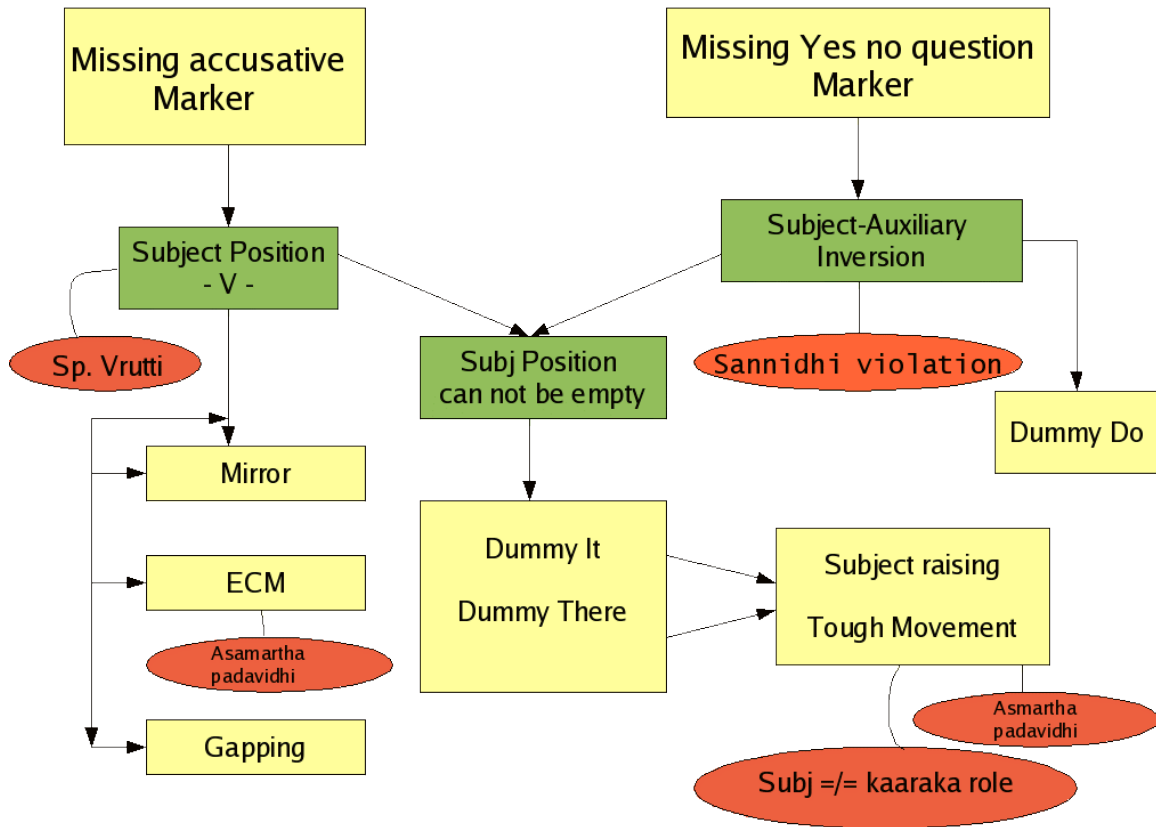
(60) is an example of gapping phenomenon. It is also interesting to note how the word order helps in triggering the correct sense of the word 'so' between its two senses, viz. 'therefore', and 'also'. Compare 60 with

Ram has gone to the market, so Shyam was waiting for him.

(61) and (62) are examples of focus on the factuality, and (63) is an idiomatic expression.

Conclusion:

The whole purpose of this exercise is to look at the structural differences between English and Hindi from an information theoretic point of view. The major reason behind the structural differences between English and Hindi is the absence of accusative marker and yes-no marker in English. To compensate for this absence, English resorts to the word order. This further gives rise to more structural differences between the two languages. The interaction between different phenomenon has been explained in the following figure.



We conclude that a Hindi reader while reading a English text has to 'tune' himself to the following:

- a) Acquire a new 'vrutti' -- the 'quazi compound' $_V_$, and
- b) do away with the normal 'sannidhi' (proximity) between a verb and its auxiliary and also between a noun and its post-position (which are integral part of Indian languages), and acquire new 'sannidhi's':
 - i) between subject and auxiliary and
 - ii) between a verb and its preposition,
 and finally,
- c) the occupancy of subject need not have any kaaraka role with the corresponding verb.

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Notes:

1) Subject in English grammar is used in three different senses.

- subject position, i.e., the position immediately left to the verb-phrase,
- the one with which noun agrees in number and person (ukta), and
- subject as in subject-predicate

Usually the noun with which verb has number-person agreement(ukta) is in Subject position. However, it need not be.

For example, in the sentence

There are flowers in the garden, and

There is a flower in the garden.

the subjects (ukta) are flowers and flower respectively, whereas the subject position is occupied by there.

2) The theta role Agent is conceptually different from the notion of kartaa. Kartaa is a syntacto-semantic notion whereas agent is a purely semantic notion[4].

3) In Indian languages ukta together with the verbal suffix (tiN) decide the kaaraka role (kartaa/karma). However, in English ukta need not have any grammatical relation with the verb. For example,

John seems to have left the city.

In this John agrees(ukta) with the verb seem, but is not the kaaraka of the verb seem. (For more details please refer to Section 3d). }

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