THE ENGLISH VERB: ORDER OF MODIFICATION
AND POINT OF REFERENCE*

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This is an attempt at a better explanation of the English verb system. It tries to show (1) that the categories of modification which are applied to the English verb are very systematically related to each other, so much so that modifications are applied to the verb in a certain definite order one after another, and that each category depends on preceding categories, (2) that, in the light of our understanding of this order, the function of each category can be more correctly defined, and (3) that, based on this order and more correct definition of the functions, the temporal categories like ASPECT, PHASE, TENSE, etc. can be conveniently explained diagrammatically by what might be called a 'Point of Reference Schema.'

I. VERB CATEGORIES

I.1. Verb and Modification

In English the verb constitutes an essential part of a sentence. A sentence can be called an expression of a proposition or predication. A predication consists of two parts: the 'subject' and the 'predicate.' The subject expresses an 'actor' in a broad sense, and the predicate expresses an 'event' which is attributed to the actor. The verb is a class of words of which the characteristic function is to appear as the main part of the predicate.

In English the verb is morphologically distinguished from the other form classes by its possibility of having what is called 'tense conjugation'—contrast between suffixation and non-suffixation of the morpheme -d.

Suffixation of -d is a form of modification given to the verb. It is

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a formal modification through which verbs like ‘love’ and ‘want’ become ‘loved’ and ‘wanted.’ This formal modification has a function. It is to give a certain kind of logical qualification or modification to the meanings expressed by the verb. The logical modification in this case is concerned with the time sphere of a particular occurrence of the event. It means that the occurrence is regarded as belonging to the past time sphere. That is why -$D$ is called past tense morpheme. We call this kind of modification past tense modification.

Non-suffixation of -$D$ is the opposite of suffixation of -$D$. It must not be construed as mere lack of modification. It is a formal modification. What is essential here is a choice between the two ways—suffixation or non-suffixation. In non-suffixation, the decision is made not to suffix -$D$; use of -$D$ is rejected. If -$D$ is used, the result is the past tense form. If -$D$ is rejected, the result is the non-past tense form. This is not neutral. Neutrality exists in the infinitive, to which the tense modification is not yet applied. But as soon as a choice is made between suffixation and non-suffixation of -$D$, the verb becomes finite, either past tense or non-past tense. Thus, non-suffixation of -$D$ is a formal modification in its own right, just as suffixation of -$D$ is a modification.

We call suffixation of -$D$ ‘marked tense modification’ or ‘past tense modification,’ and non-suffixation of -$D$ ‘unmarked tense modification’ or ‘non-past tense modification.’ These two constitute the Tense modification as a whole.

The unmarked tense modification has its own function accordingly. It expresses that the occurrence of the event is regarded as belonging to the non-past time sphere. The function is not mere lack of logical specification about the time sphere of the occurrence. If the Tense modification as a whole is lacking, the event will be conceived in the abstract without any reference to time sphere. But as soon as the Tense modification is applied, the occurrence is conceived in the concrete in relation to time sphere, as belonging to a certain part of the entire time sphere. And if the modification is unmarked instead of marked, the occurrence is regarded as belonging to the time sphere which is not the past time.

In this way, the Tense modification consists of two terms: the marked tense modification and the unmarked tense modification. Each of them has its own logical function, and it is to give a logical modifica-
tion to the time sphere of occurrence of the event expressed by the verb.

In addition to Tense, the English verb receives several other such modifications. Some markers can be merely inflectional, but others can be syntactical—in the form of what is called periphrasis. The periphrasis ‘BE+Past participle’ is the form for the passive voice modification.

To sum up, a modification of the English verb is both formal and logical. A formal modification is either giving a particular formal marker to the verb or not giving it. A marker can be either inflectional or syntactical. The function of a formal modification is to give a logical modification to the meanings expressed by the verb.

I. 2. Categories of Modification

The categories of modification which can be recognized in the Present-Day English verb are PERSON-NUMBER, TENSE, ASSERTION, PHASE, ASPECT and VOICE. In the most complex type of verb phrases, the categories are realized as in the following:

![Diagram of verb phrases with categories of modification]

In the figures above, the marked modifications are marked by two lines as \_/ , the unmarked modifications are marked by one line as |. Marked or unmarked, the categories of modifications are arranged as shown in the figures.

The forms and the functions can be conveniently summarized as in the following table.
PERSON and NUMBER are logically two separate categories, but morphologically they are inseparably combined in English, and they have been so, indeed, all through the history of the Indo-European languages attestable. We cannot isolate the form for each category unless we set up some fictitious morphemes.

Application of PERSON-NUMBER is very limited. It applies only when ASSERTION is non-modal and TENSE is non-past.

But, however limited, the distinction still exists, and we cannot neglect it.

A discussion on the function of each category will be given in II. 2.

II. ORDER OF MODIFICATION

II. 1. Formal Order

Let us now examine how the formal modifications are applied to the verb. The most heavily marked verb phrase will go like 'might have been being written.' This is marked in five out of the six categories:
This figure shows that each part of the verb phrase is the result of a modification in which the last element of each category is applied to the first element of the immediately right hand side category. In the marked tense modification, the element -D is suffixed to MOD AUX, MAY, which is the first element of the Assertion category, and then might is produced. In the Assertion modification, the second element means that no change is required of the first element of the Phase category, or it means that the Phase element should be in the form of the bare infinitive. So this produces have. The second element of the Phase category, in turn, works on the first element of ASPECT, BE, and produces been. The second element of ASPECT, -ING, works on the first element of VOICE, BE, and produces being. Finally, the second element of VOICE, -N, works this time on the verb itself, making it written.

This means that the Tense modification presupposes the Assertion modification, which, in turn, presupposes the Phase modification, which, in turn, presupposes the Aspect modification, which, in its own turn, presupposes the Voice modification, which, finally, of course, presupposes the existence of the verb stem. In a word, each category presupposes the existence of its immediately right hand side category. So we should understand that the actual order of formal modification of the verb is from VOICE up to PERSON-NUMBER.

In the case of might have been being written, the modifications go as follows:

1. VOICE modification: the marker BE-N is given to the stem WRITE. This produces BE written.
2. ASPECT modification: the marker BE -ING is given to BE written. This produces BE being written.
3. PHASE modification: the marker HAVE -N is given to BE being written. This produces HAVE been being written.
4. ASSERTION modification: the marker MAY—is given to HAVE been being written. This produces MAY have been being written.
5. TENSE modification: the marker -D is given to MAY have been being
written. This produces might have been being written.

(6) PERSON-NUMBER modification: the unmarked form is employed here; no marker is given to the result of (5). So the final result is might have been being written.

If we suppose that the modifications take place from the left, it will happen that the first modification is PERSON-NUMBER. The stem is write, and if -z₃ is suffixed to this, the result will be writes. If PERSON-NUMBER is unmarked, and if TENSE is the first marked modification, the result will be wrote. In any case, what will happen next? We will go no further. We cannot add MOD AUX to the verb, nor HAVE -N, nor BE -ING, nor BE -N. The direction of modification from the left to the right is practically impossible.

If we are forced to give the marked Assertion to wrote, for instance, what we can do is to reduce the past tense form back to its stem form write and then put MOD AUX in front of it as may write, and then give the Tense modification back again to may this time, not to write, thus obtaining might write. In this way we have to get back to the right hand edge and start there afresh.

And, in fact, when we have produced the past tense form wrote by suffixing -D to the stem write, we have already given it all the modifications which are placed to the right of TENSE, because wrote is in itself active as for VOICE, perfective as for ASPECT, non-perfect as for PHASE, and non-modal as for ASSERTION. The decision has already been made to choose the unmarked modification in each of these categories. The form wrote is active, perfective, non-perfect, non-modal and past.

So we may conclude that the formal modifications proceed from the right to the left as follows:

\[
\begin{array}{cccccc}
\text{PERSON-NUMBER} & \text{TENSE} & \text{ASSERTION} & \text{PHASE} & \text{ASPECT} & \text{VOICE}
\end{array}
\]

The verb receives modifications from VOICE up to PERSON-NUMBER one after another. No skipping of any one category is allowed. In each category a choice is obligatory between the marked and the unmarked form. No category of modification can be realized until all the preceding categories have been realized. In this sense, application of one category of modification depends on the application of all
the preceding categories.

Also we notice that the categories from VOICE up to PHASE can appear in the infinitive, participle, and gerundial form. In 'to have been being written,' VOICE, ASPECT, and PHASE are realized, but not ASSERTION, TENSE and PERSON-NUMBER. This is what we call 'non-finite.' When the last three categories are realized, the form will be like 'may/might have been being written' or 'has been being written.' And this is what is called 'finite.' So we may call VOICE, ASPECT, and PHASE non-finite categories, and ASSERTION, TENSE and PERSON-NUMBER finite categories.

II.2. Logical Order

Let us now examine what sequence or order is required from the logical point of view.

(1) VOICE. Of the above modification categories, VOICE is different from the others in one important point. It is that the contrast between the active and the passive with one and the same verb signals different events. The active hate and the passive be hated, for instance, are different events in relation to one and the same subject.

(a) He hates her.
(b) He is hated by her.

The two events are very different. If passive modification is given to (a), the result will be

(a)' She is hated by him.

Here we have a different subject. The subject and the object in sentence (a) must be inverted. The difference of VOICE causes a difference of subject-predicate relation.

So long as one event is predicated about one and the same subject, no contrast of VOICE is possible. When a certain event is to be predicated about a certain subject, and if the decision is made to use a certain verb, the use of one or the other voice form has to be accordingly decided practically at the same time. This is because the difference of VOICE signals different events.

Signalling of different events is a very essential characteristic of the Voice modification. The other modifications are not so. They all signal a difference in something about one and the same event.

And, logically, signalling of difference of events is more essential than signalling of difference in something about one and the same event.
Therefore, VOICE should logically precede all the other categories. It is logically the first category of modification the verb stem receives. (2) ASPECT and PHASE. Among the remaining categories, we would like to examine ASPECT and PHASE to decide which precedes the other logically.

ASPECT is a category which is concerned with whether the event is grasped in its process of development or continuance, or in its entirety:

He was reading a book at ten this morning.

He read a book this morning.

Here the time at which the event is grasped is either within the duration of the event or simultaneous with the event. What is concerned here is always the time of the event itself. No point of time or duration of time outside the time of the event is necessary for ASPECT.

On the other hand, PHASE is a category in which the grasping of the event is conceived in relation to a point of time outside the time of the event. The function of the marked Phase modification is to confirm a certain kind of connection between the occurrence of the event and a certain later point of time, in such a way that the connection is a kind of 'livingness,' either continuance, influence or result, which the occurrence has at the later point of time.

The train had already left when I reached the station.

I have finished my work now.¹

¹It should be noted that the event here is 'finish,' not 'work'. This is a punctual action; it takes place in an instant. So we say 'He finished his work at seven,' not 'He finished his work for three hours,' while we say 'He worked for three hours.'

The adverb 'now' is the speaker's present point of time. It is not identical with the time of the event 'finish', however close it may be to this.
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In all these examples, two points of time are involved—the time of the event and a certain later point of time.

The point of time which comes after the time of the event is a point of time from which the speaker confirms the time of the event, its anteriority and its relation or 'livingness' at that point. And, in order to do this, the time of the event itself must be established first. Its exact time or date may not be clear, but its existence is presupposed. And it is ASPECT which confirms the time of the event presupposed by PHASE. So it follows that ASPECT logically precedes PHASE. (3) ASSERTION and PHASE. ASSERTION is a category which signals whether the occurrence of the event is grasped with a certain conception of modality such as possibility, necessity, etc., or without any such conception, just in its factuality. This is a category of the speaker's attitude or appraisal about factuality or modality of the occurrence. When we say, for instance,

You must have done the work long before,

this signifies that we are convinced of the existence at present of the livingness or result of the past time event. The speaker's appraisal is not directly applied to the event itself, but to the situation after the event, or rather to the later point of time from which the time of the event is confirmed. The time of the event is past in the above sentence, but the speaker's appraisal is on the present moment.

1 In this example, too, we have two points of time, the time of the event and the speaker's point of time. They may be very close to each other, but they are still different points. When the speaker says this sentence, 'he' is already out of sight. A. J. Thomson & A. V. Martinet, A Practical English Grammar (Oxford University Press, 1969), § 180, paraphrases the sentence as 'he went out a few minutes ago.'
It is the same with the following sentence, except for the difference of TENSE.

He thought she might have been at the party.

In this way ASSERTION is related to the time of the event always through the point of time for PHASE. This means that ASSERTION is logically preceded by PHASE.

(4) ASSERTION and TENSE. As for TENSE, it is generally understood that this category signals whether or not the occurrence of the event is regarded as belonging to the past time. But this is not strictly correct. For instance, in the following present tense predication:

He has been here once,

the event 'his being here' evidently occurred in the past time. It does not belong to the present time sphere. What is 'present' here is the state of affairs after the event. The Tense modification is applied to the state established by the phase modification.

It is the same with the following sentence, which has the marked Assertion modification:

He may have reached there by now.

The present tense 'may' does not refer to the time of the event, but to the probability expressed by the modal auxiliary. It says that the probability belongs to the present time sphere. When we say,

She said he might have reached there by then,
the probability is regarded as belonging to the past time sphere.\footnote{In the case of \textit{might} in a modest statement like \textquote{He might be rich,} the modal does not actually point to the past time. But this can be explained as a case of stylized rhetoric. The speaker wants the statement to be regarded as belonging to the past time rather than the present, and so uses the past tense. By this he achieves a sort of modesty. The past tense still points to the past formally, though not actually.}

Therefore, we should understand that the Tense modification does not apply directly to the time of the event, but to the speaker’s Assertion about ‘factuality’ or ‘modality’ of the occurrence. TENSE is a category which expresses whether or not the assertion about the occurrence of the event is regarded as belonging to the past time sphere. This means that ASSERTION comes first and that TENSE is applied only after ASSERTION is decided. Therefore we must say that ASSERTION precedes TENSE.

(5) PERSON-NUMBER. PERSON-NUMBER is a category which specifies to what kind of subject a particular occurrence is attributed. It involves the \textit{kind} of the subject referent.

All the other categories can be defined, as we have done so far, without any reference to the kind of the subject—in universality, so to speak, with regard to the kind of the subject.

But in PERSON-NUMBER, the occurrence, or rather a variously modified statement about the occurrence, is specified as belonging to a certain kind of subject—either a 3rd person singular subject or otherwise. This is a trivial and the least essential, and therefore the most specified kind of modification of the event. This is the last category of modification. Every other category precedes this.

(6) Conclusion. It will be clear now from the foregoing observation that the logical order of modification of the English verb is from VOICE through ASPECT, PHASE, ASSERTION, TENSE to PERSON-NUMBER. And we should understand that this logical order has necessitated the formal order we have confirmed in the previous section.

\section*{II. 3. Redefinition of the Functions}

We have seen in the above that both formally and logically, the modifications proceed from VOICE through ASPECT, PHASE, ASSERTION, TENSE up to PERSON-NUMBER, and that each modification is applied to the result of its immediately preceding modification, not directly to the event expressed by the main verb.
This requires a redefinition of the function of each category, except for the first, VOICE, because the tentative definition we used in II. 2. is based on the assumption that each modification is applied directly to the event expressed by the main verb. We would like to redefine the function of each category except VOICE as in the following.

ASPECT:
Imperfective: expresses that the occurrence of the event as defined by the Voice modification is regarded as in process at a certain time.
Perfactive: expresses that the occurrence of the event as defined by the Voice modification is regarded as taking place in its entirety.

PHASE:
Perfect: expresses that the state of occurrence of the event as defined by the Aspect modification is regarded as having some kind of connection with, or 'livingness' at, a certain later point of time.
Non-Perfect: expresses that the state of occurrence of the event as defined by the Aspect modification is not regarded as having such connection with, or 'livingness' at, a certain later point of time.

ASSERTION:
Modal: expresses that the grasping of the state of occurrence of the event as defined by the Phase modification is stated in various kinds of modality such as possibility, probability, necessity, contingency, etc.
Non-Modal: expresses that the grasping of the state of occurrence of the event as defined by the Phase modification is stated in factuality instead of modality.

TENSE:
Past: expresses that the statement about the grasping of the state of occurrence of the event as defined by the Assertion modification is regarded as belonging to, or valid in, the past time sphere.
Non-Past: expresses that the statement about the grasping of the state of occurrence of the event as defined by the Assertion modification is regarded as belonging to, or valid in, the non-past time sphere, either present or future.

PERSON-NUMBER:
3rd Person Singular: expresses that the statement about the grasping of the state of occurrence of the event as defined to belong to a certain time sphere by the Tense modification is attributed to a 3rd person singular subject.
Non-3rd Person Singular: expresses that the statement about the grasping of the state of occurrence of the event as defined to belong
to a certain time sphere by the Tense modification is attributed to a non-3rd person singular subject.

III. POINT OF REFERENCE

Among the categories we have defined in the above, ASPECT, PHASE and TENSE clearly involve time, as will be seen from the fact that these have been traditionally called merely 'tenses.' Also ASSERTION is related to time to some extent through its modality like possibility, probability, etc. We assume that these more or less temporal categories can be conveniently explained by what we would like to call a 'Point of Reference Schema.' This idea is borrowed from Hans Reichenbach's treatments of English tenses. But his schema is not sufficient, and we believe we can expand and modify it so that it can be very usefully employed for the explanation of the functions of those temporal categories.

III. 1. Reichenbach's Point of Reference Schema

(1) Points of Event, Reference and Speech

Hans Reichenbach, in his treatments of English tenses,¹ says that their functions can be explained by using the following three time points:

Point of the event: E
Point of reference: R
Point of speech: S

These three are placed on a line representing the flow of time from the past to the future: →. The point of reference is a time point from which the event or rather the point of the event is grasped or confirmed. The functions of various 'tenses' can be reduced to various relations among these three points placed on the time line.

Reichenbach gives the following illustrations:²

(1) Past Perfect
   I had seen John
   E R S

(2) Simple Past
   I saw John
   R E S

(3) Present Perfect
   I have seen John
   E S, R

¹ Hans Reichenbach, Elements of Symbolic Logic (The Macmillan, 1947), § 51.
² Numbering is given by the present writer for convenience's sake.
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(4) Present
I see John

(5) Simple Future
I shall see John

(6) Future Perfect
I shall have seen John

(7) Past Perfect, Extended
I had been seeing John

(8) Simple Past, Extended
I was seeing John

(9) Present Perfect, Extended
I have been seeing John

(10) Present, Extended
I am seeing John

(11) Simple Future, Extended
I shall be seeing John

(12) Future Perfect, Extended
I shall have been seeing John

(2) Some Difficulties

We do not find much difficulty in following his illustrations from (1) to (6). But when it comes to (7) on, a definite limitation of his schema is revealed in dealing with 'extended tenses,' 'perfect tenses,' and 'future tenses,' or our modal Assertion.

(a) R for Extended Tenses

The diagrams of extended tenses have an inconsistency, although it is rather minor. Take illustrations (8) and (10).

(8) I was seeing John

(10) I am seeing John

They are both in the extended (expanded) form. The only difference is in TENSE. The one is in the past and the other is in the present.

With the present tense, R is placed on a point within E as

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1 Comments on Reichenbach's schema from a different point of view are found in R.L. Allen, The Verb System of Present-Day American English (Mouton, 1966), § 4. 13.
With the past tense, however, it is not placed on any point within E, but placed as if it were coextensive with E as \( \overrightarrow{R, E} \). This different treatment of \( R \) does not seem to be justified. He does not explain this. In our view, there is no reason why the difference of TENSE should cause that in the relation between E and R. If R is on a point within E in the present tense, it should also be on a point within E in the past tense, without regard to the whereabouts of S. The place of \( R \) within E is essential to extended tenses, the imperfective Aspect. So illustration (8) should be correctly diagrammed as:

\[
\begin{array}{cccc}
\text{E} & \text{R} & \text{S} \\
\end{array}
\]

(b) R for Extended Tenses or for Perfect Tenses?

Now, the above observation concerning the place of \( R \) for the extended tenses should apply to the other illustrations as well. There should be \( R \) within E. However, a contradiction occurs here. The extended form requires \( R \) to be placed within E, while the perfect form requires it to be placed after E as in (1), (3) and (6). What should we do when both the extended form and the perfect form are used?

Facing this contradiction, Reichenbach seems to have favored the requirement from the perfect form. Illustrations (7) and (9) show this. \( R \) is placed after E. No point of reference is given to the extended tenses.

(7) I had been seeing John

(9) I have been seeing John

(c) R for Modal Assertion

With illustration (11), Reichenbach must have thought that the auxiliary 'shall' has a prospective function, thus looking forward to E from a point of reference preceding it. And this is why the 'shall' periphrasis is traditionally called a future tense. So he places \( R \) before E. As the result, no point of reference is given to the extended form.

(11) I shall be seeing John

\[ \overrightarrow{S, R, E} \]
When it comes to illustration (12), things become more curious. With this 'future perfect, extended' tense, no R is given to the 'future' this time, let alone the extended. The R given here is only to the perfect, and accordingly it is placed after E.

(12) I shall have been seeing John

But the modal 'shall' would require R of its own placed with S, just as in (11). He neglects this requirement in order to give R to the perfect. This is the same with illustration (6).

III. 2. Our Point of Reference Schema—with Plural R’s

(i) Necessity of Plural R’s

The above observation on Reichenbach’s schema will reveal that his failure in consistent explanation of all the temporal modifications is caused by the fact that he admits only one R. In actuality, more than one R is necessary in order to explain the functions of the verb forms which receive more than one modification.

In fact, each temporal modification requires one R of its own. ASPECT requires R of its own as shown by illustrations (8) and (10). PHASE requires its own R as shown by (1) and (3). ASSERTION, too, requires its own R as shown by (5). Reichenbach knows this, but when two or three categories appear concurrently, he gives R to only one of them, leaving the others without R of their own.

But there is no reason why only one R must be used. If each category requires one, just give one to each. If we do not do so, we will not be able to explain the functions of the complex verb modifications systematically in diagram. Reichenbach’s schema needs to be modified and expanded by admitting plural R’s in it. In addition to plural R’s, we would like to introduce some minor but supposedly convenient devices. Then our schema will be as in the following.

(2) E

As for the point of the event E, it would be convenient to subdivide it into two parts as follows:

Point of the event: E
   Beginning point: E₁
   Ending point: E₂
Many events have some more or less noticeable duration of time between $E_1$ and $E_2$. Other events are punctual, and $E_1$ and $E_2$ merge into one: $E$.

![Diagram showing the order of modification between $E_1$, $E_2$, and $E$.](Diagram)

(3) R's

R is necessary for each of ASPECT, PHASE, ASSERTION and TENSE.

So we must set up the following R's:

- Point of reference for ASPECT: $R_a$
- Point of reference for PHASE: $R_p$
- Point of reference for ASSERTION: $R_s$
- Point of reference for TENSE: $(R_t) =$ Point of Speech: $S$

(4) Use of Arrows

Relations between two points of time can be conveniently marked by arrows. When one point is simultaneous with another, the former will be marked with $\uparrow$, when preceding, with $\rightarrow$, when following, with $\leftarrow$, and when in between, with $\leftrightarrow$, as in the following, for instance:

$R \rightarrow R \leftarrow R E_1 \leftarrow R \rightarrow E_2$

(5) Application

Now how can these points of time be related to one another diagrammatically? Here the order of modification we have established in II has a crucial meaning. We have claimed that the modification proceeds from VOICE through ASPECT, PHASE, ASSERTION, TENSE up to PERSON-NUMBER, and that each category is applied to the result of its immediately preceding category.

This means that the points of reference and the point of speech should be related to $E$ in that order, but that each of them should be related directly only to the point of its immediately preceding category, not directly to $E$. 
Also we have noted in I that both the marked and the unmarked modification in each category are modifications in their own right. This means that not only the marked but also the unmarked modification has its own point of reference.

Now first of all we have E. This is the point of the event. This event is the result of the Voice modification, because the action denoted by the verb becomes a definite event, either active or passive, only after VOICE is applied.

\[
\begin{align*}
E_1 & \quad \text{or} \quad E_2 \\
\text{or} & \\
E & \\
\end{align*}
\]

The point of reference for ASPECT: \( R_a \) is directly related to \( E \):

\[
\begin{align*}
\text{ASPECT: Imperfective:} & \quad E_1 \rightarrow E_2 \\
& \quad \ll \rightarrow \ll \rightarrow \\
\text{Perfective:} & \quad E \rightarrow R_a \\
\end{align*}
\]

The point of reference for PHASE: \( R_p \) is related to \( R_a \):

\[
\begin{align*}
\text{PHASE: Perfect:} & \quad \ll \rightarrow \ll \rightarrow \\
& \quad \ll \rightarrow \ll \rightarrow \\
\text{Non-Perfect:} & \quad \ll \rightarrow \ll \\
\end{align*}
\]

The point of reference for ASSERTION: \( R_s \) is related to \( R_p \):

\[
\begin{align*}
\text{ASSERTION: Modal:} & \quad R_s \rightarrow R_p \\
& \quad \ll \rightarrow \ll \rightarrow \\
\end{align*}
\]

---

1 The event is grasped in its process, and this means that it is only partly realized at the point concerned. The dark side indicates the realized part.

2 With the marked Phase modification, the distance between \( R_a \) and \( R_p \) can be very short. Indeed they are very close when ASPECT is marked, so much so that they can be almost in contact with each other. But they can never be simultaneous as far as PHASE is marked.

3 With the modal Assertion, \( R_s \) sometimes precedes \( R_p \), as in 'you may go now,' but
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Non-Modal:

\[ \begin{array}{c}
R_p \\
R_s
\end{array} \]

The point of reference for TENSE: S is related to \( R_s \):

**TENSE:** Past:

\[ \begin{array}{c}
R_s \\
S
\end{array} \]

Non-Past:

\[ \begin{array}{c}
R_s \\
S
\end{array} \]

The diagrams for the categories can be arranged in one table as follows:

**Table 2**

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>POINT OF REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MARKED</td>
</tr>
<tr>
<td>ASPECT</td>
<td>Imperfective</td>
</tr>
</tbody>
</table>
|           | \[ \begin{array}{c}
E_1 \\
E_2
\end{array} \] | \[ \begin{array}{c}
E
\end{array} \] |
|           | \[ \begin{array}{c}
\rightarrow R_a
\end{array} \] | \[ \begin{array}{c}
\rightarrow R_a
\end{array} \] |
| PHASE     | Perfect           | Non-Perfect       |
|           | \[ \begin{array}{c}
R_a \\
P_p
\end{array} \] | \[ \begin{array}{c}
R_a \\
P_p
\end{array} \] |
| ASSERTION | Modal             | Non-Modal         |
|           | \[ \begin{array}{c}
R_s \\
R_p
\end{array} \] or \[ \begin{array}{c}
\rightarrow R_p
\end{array} \] | \[ \begin{array}{c}
R_s \\
R_p
\end{array} \] |
| TENSE     | Past              | Non-Past          |
|           | \[ \begin{array}{c}
R_s \\
S
\end{array} \] | \[ \begin{array}{c}
R_a \\
\rightarrow S
\end{array} \] |

sometimes simultaneous as in ‘he may be rich.’ ASSERTION in itself is not temporal. It acquires temporal implications only through modality such as possibility, necessity, etc.
(6) Illustrations

In an actual predication, all the categories in the table above are realized all at once. If all of them are unmarked, the result is the simplest schema:

Perfective, Non-Perfect, Non-Modal, Non-Past:

He reads the paper every morning.

\[
\begin{array}{c}
\text{E} \\
\uparrow \\
R_a \\
\uparrow \\
R_p \\
\uparrow \\
R_s \\
\uparrow \\
S
\end{array}
\]

If all the categories are marked, this gives the most complex schema:

Imperfective, Perfect, Modal, Past:

He said he would have been staying there for six months by then.

\[
\begin{array}{c}
\text{E}_1 \\
\text{E}_2
\end{array}
\]

In our schema, Reichenbach’s examples in III. x. (1) above will be represented as follows:

(1) I had seen John

\[
\begin{array}{c}
\text{E} \\
\uparrow \\
R_a \leftarrow R_p \\
\uparrow \\
R_a \leftarrow S
\end{array}
\]

(2) I saw John

\[
\begin{array}{c}
\text{E} \\
\uparrow \\
R_a \\
\uparrow \\
R_p \\
\uparrow \\
R_a \leftarrow S
\end{array}
\]

(3) I have seen John

\[
\begin{array}{c}
\text{E} \\
\uparrow \\
R_a \leftarrow R_p \\
\uparrow \\
R_s \leftarrow \\
\uparrow \\
S
\end{array}
\]

\[\text{As for the distance between } R_a \text{ and } R_p, \text{ see note 2, p. 98. In order to confirm the completion of a six months’ stay (even though it still continues after that), a point of reference outside the duration of the six months is necessary, although it may be an immediately following point of time.}\]
I. The English verb receives several modifications. Each of them gives the verb a formal change, and through this it achieves a certain kind of logical limitation or qualification of the meanings expressed by the verb. We call them formal modification and logical modifica-
tion respectively.

I. 2. The categories of modification are PERSON-NUMBER, TENSE, ASSERTION, PHASE, ASPECT and VOICE. Their forms and functions are summarized in Table 1 (p. 84).

II. 1. The formal modification proceeds from VOICE up to PERSON-NUMBER as follows:

```
PERSON-NUMBER ← TENSE ← ASSERTION ← PHASE ← ASPECT ← VOICE
```

The stem of the verb is first put to the Voice modification, and the result is put to the Aspect modification and so on until the final result comes out of the Person-Number modification.

In each category, the unmarked modification is a modification in its own right, just as the marked modification is.

The verb receives the modifications one by one without skipping any one of them. No one category can be realized until all the preceding categories are realized.

II. 2. The logical order of modification proceeds from VOICE through ASPECT, PHASE, ASSERTION, TENSE to PERSON-NUMBER. It should be understood that this logical order has necessitated the formal order in the above.

II. 3. The definition of the functions of the categories must be based on the order of modification we have established. The function of each category must be defined in relation to that of its immediately preceding category.

III. 1. ASPECT, PHASE, ASSERTION and TENSE involve time in their functions. Their functions in relation to time can be diagrammatically represented by the use of the point of the event E, the point of reference R and the point of speech S given by Hans Reichenbach, *Elements of Symbolic Logic* (The Macmillan, 1947), § 51. This is a very ingenious and useful schema, but it has some limitations.

III. 2. It is possible to make Reichenbach's schema satisfactory, if we introduce (1) more than one R and (2) the order of modification. We claim that our schema explains those temporal categories very satisfactorily. This improved schema is given in Table 2.

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