BLACK TAI SENTENCE TYPES
A GENERATIVE SEMANTIC APPROACH¹

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Introduction

One of the major developments in modern linguistics has been an increased awareness and study of the relationship between semantics and syntax. Syntactic structure is basically a form—a device specific to a given language—by which its speakers express underlying semantic concepts, many of which are common to human beings throughout the world.

In studying the syntax of a language, if we begin with these underlying concepts and work from the meaning down to the form, we are at a twofold advantage. First, the global nature of many broader semantic categories gives us a predictable starting point from which to investigate the diversified, less predictable syntactic patterns of individual languages. Second, the classifying of syntactic features according to the semantic categories they manifest is more relevant and satisfying than a classification based only on surface syntactic patterns. If we begin with broad semantic categories that divide conceptual experience in a meaningful fashion, it is highly probable that these divisions will be reflected in the syntax in one way or another to a large degree, and that these contrastive features will be among the ones of greatest interest. The syntactic 'feedback', in turn, can be used to cast further light on the semantic structure of the language.

For a number of years now, linguists have been wrestling with the problem of defining those semantic categories which adequately map out the range of human experience, and we are indebted to them for their labor. Charles Fillmore (1968), for example, focused on the case configurations associated with various verbs. Wallace Chafe (1970) gave more attention to the nature of the verb itself, showing a basic division between states, processes, and actions, and demonstrating the applicability of this verbal division to various noun configurations in a semantic analysis of English. Thus, meaningful semantic categories have been shown to exist along two parameters—the nature of the verb itself, and the nature of the noun case roles that surround the verb. In effect, verbs, and the sentences in which they occur, may be classified semantically according to these two criteria.

This paper uses these two parameters to develop a matrix whose members constitute semantic sentence types widely found in human speech. The matrix then provides us with a logical starting point for the investigation of the semantic and syntactic sentence structures of a specific language. Application of the matrix is made to a survey of sentence types in the Black Tai language of Vietnam.²
Predicate Categories

In examining the semantic structure of English, Chafe (1970:98ff) conceives of four fundamental verb types:

1. A verb, further specified as a state, describing the state of an associated patient:

   (1) The elephant is dead.

2. A verb, further specified as a process, describing the change from one state to another of an associated patient:

   (2) The elephant died.

3. A verb, further specified as an action, describing the activity of an agent:

   (3) The men laughed.

4. A verb, further specified as both an action and a process, describing the action of an agent to bring about a change in the condition of a patient:

   (4) The tiger killed the elephant.

In addition, Chafe (1970:101f) speaks of ambient sentences, in which no noun exists at all. Sometimes the verb in such sentences is specified as a state:

   (5) It's hot.

   (6) It's late.

and sometimes, as a process:

   (7) It's raining.

The distinction between state, process, and action is by no means limited to verbs associated only with agents and/or patients. Chafe (1970:144ff) demonstrates this in some measure by applying the verbal distinction to sentences containing a number of other noun configurations as well. I would suggest, in fact, that this verbal distinction is as basic to the semantic classification of human experience as are the noun case roles associated with a verb, and therefore that the distinction of verbs between states, processes, and actions subdivides the sentences containing any given configuration of case roles, unless it can be demonstrated that a given combination of verb type and role set is incongruous with our conceptual experience.

The sentence types which Chafe labels ambient share a common feature with his third basic sentence type (verb specified as action, plus agent), namely, just as the ambients are deleted-patient subsets of basic sentence types 1 and 2, so sentence type 3 is, in essence, a deleted-patient subset of sentence type 4. Note the following illustrations:
\( V_{\text{state}} \) (patient)

(8) The stove is hot.

\( V_{\text{state}} \)

(9) It's hot. (i.e. The weather is hot.)

\( V_{\text{process}} \) (patient)

(10) He's growing up.

\( V_{\text{process}} \)

(11) It's raining.

\( V_{\text{process}} \) (agent, patient)

action

(12) The hunter killed the elephant.

\( V_{\text{action}} \) (agent)

(13) The men laughed.

In the case of sentences such as (13) (Chafe's third basic sentence type), it is probably more accurate to say that the patient is manifested by the same noun as the agent, but is in some way non-prominent in the semantic structure, and lacks the capacity for unique manifestation, rather than to say that the patient is deleted altogether.\(^3\) This does not destroy the analogy with ambient verbs, however. Even ambient verbs could be said to have a patient at some deep level of semantics, but because of its indefinite or irrelevant nature, the patient is relegated to the level of the subconscious and is ordinarily not expressed.\(^4\)

If it is true that the subject of (13) fills both agent and patient roles (the patient being present only in a non-prominent sense), we may wonder whether the predicate\(^5\) relates the two roles in the same way as in (12), and, if so, whether the two predicates should be labeled identically. This, in turn, leads to a more general and important question needing our consideration: what is the distinctive characteristic of predicates relating agents to patients? In sentence (14), it is apparent that the agent causes the patient to undergo a process involving a change of state:

(14) The explorer killed the bear.

Therefore:

(15) The bear died.\(^6\)
This relationship between agent and patient may be symbolized:

\[ P_{\text{causative}} (Ag, P_{\text{process}} (Pt)) \]

It is more difficult to see a causative relationship in a sentence such as (16):

(16) The boy hit the wall.

The difficulty is that the action of sentence (16) does not inherently involve a change of state on the part of the patient, expressible in a paraphrasing process sentence, as (15) paraphrases the change of state inherent in (14). We normally do not include such verbs as 'to become hit' among change-of-state verbs. And consequential processes, such as

(17) The wall caved in.

or

(18) The wall got scuffed up.

are not inherent in (16). Thus we could say:

(19) The boy hit the wall, but nothing happened to it.

But sentence (20) would be anomalous:

(20) The explorer killed the bear, but nothing happened to it.

It seems that an adequate view of the relationship between agents and patients is broader than the causing of a change of state, at least in the more limited sense we have employed thus far. Rather, for sentences such as (16) as well as those such as (14), we may say that the agent causes the patient to be affected in the manner described by the predicate (e.g. 'to become hit'), symbolized:

\[ P_{\text{causative}} (Ag, Pt) \]

This, in turn, may cause the patient to undergo some change-of-state process as a direct consequence (e.g. sentence (17) 'caved in')—sometimes as an inherent consequence (e.g. sentence (15) 'died'). This secondary causative is symbolized, as earlier:

\[ P_{\text{causative}} (Ag, P_{\text{process}} (Pt)) \]

Causation, then, seems to lie at the heart of the agent-patient relationship. Let us therefore consider all predicates relating agents and patients as \( P_{\text{causative}} \).

In forming a matrix to serve as a semantic starting point with
which to approach the sentences of a specific language, then, let us use the following predicate categories as the horizontal parameter:

state          process          causative

Noun case roles—bound and unbound

We turn our attention now to the noun roles associated with various predicates. Note the following sentence:

(21) Yesterday I took the broken radio to the repair shop for Becky.

A survey of the noun roles manifested in this sentence results in two major groupings. The first group consists of roles which are closely bound with the predicate $take$, because the semantic content of the predicate is closely relatable to the semantic content of the role. In sentence (21), these roles are agent $I$, patient $the$ $broken$ $radio$, and direction $the$ $repair$ $shop$. There is a natural basis for the co-occurrence of these roles with the predicate $take$, due to the shared semantic features, and thus there is a notable tendency for the roles to be overtly expressed. We shall refer to the roles closely bound with a given predicate as bound roles.

The other roles in sentence (21) are semantically present with, but not closely bound with the predicate $take$. These are time $yesterday$, and beneficiary $Becky$. The (tenseless) predicate does not share semantic features with these roles. The roles, then, may be termed unbound. Typically, unbound roles are semantically present over a wide range of sentence types, but are less likely to be expressed at the surface in a given case than are the bound roles. We may say that, as a general rule, of all the roles semantically present with a given predicate, those that are bound with the predicate tend to be expressed at the surface, but are optionally deleted (when the syntactic rules permit); those that are unbound tend not to be expressed, but are optionally included.9

Bound role clusters

A survey of the clusters of bound roles surrounding various predicates allows us to make an initial two-fold classification: between clusters containing an entity whose existence or formation is being predicated, which role we label factivive, following in part Fillmore (1968:25), and clusters containing an entity whose existence is assumed, and whose state is being described or affected (at least potentially) by the predication, which role we label patient, following Chafe's (1970) general usage. We then divide the vertical parameter of the matrix into two groups of role clusters: the formational group, containing factives, and the modificational group, containing patients.

The modificational group is perhaps the larger, and to this group
we now devote our attention. Chafe (1970:144) rightly observes that
patient and agent seem to play a more fundamental role than any other
noun-verb relation because of the relationship of these two to his
verbal specifications of state, process, action, and action-process.
In fact, we may add (except in the case of ambients--i.e. sentences
in which the patient is deleted or suppressed), whenever other bound
roles occur at all, they are simply appended to one of the following
*basic configurations:*

\[ P_{\text{state}} \ (\text{patient}) \quad P_{\text{process}} \ (\text{patient}) \quad P_{\text{causative}} \ (\text{agent, patient}) \]

Many predicates require the addition of one or two bound roles
to the set of basic patterns shown above, resulting in a number of
subsets to the basic group. Some of these additional bound roles are:
identity, possessor, experiencer, direction, and temporal direction.
It is not within the scope of this paper to attempt an exhaustive list-
ing of such roles. Rather, I shall label the clusters formed by the
roles I have named, and use these labels as a tentative vertical para-
meter in a matrix of sentence types, a parameter which may be augmented
as the need arises.

The possessor role also occurs in a subset of sentence types in
the formational group. Within this group, other role subsets probably
occur as well, but are not treated in this paper.\(^{10}\)

The predicate categories and the bound role clusters discussed
above, then, yield the following matrix of semantic sentence types.
Unbound roles are not included in the matrix, but are discussed sep-
arately. Brief English examples of each sentence type are included
in the matrix, but fuller illustration is reserved for the application
of the matrix to Black Tai.
<table>
<thead>
<tr>
<th>ROLE CLUSTERS</th>
<th>STATE</th>
<th>PROCESS</th>
<th>CAUSATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. FORMATIONAL</td>
<td>P&lt;sub&gt;st&lt;/sub&gt; (F)</td>
<td>P&lt;sub&gt;pr&lt;/sub&gt; (F)</td>
<td>P&lt;sub&gt;ca&lt;/sub&gt; (Ag, F)</td>
</tr>
<tr>
<td></td>
<td>The rumor exists.</td>
<td>The rumor developed.</td>
<td>John started the rumor.</td>
</tr>
<tr>
<td>I.A. Possessional</td>
<td>P&lt;sub&gt;st&lt;/sub&gt; (F, Po)</td>
<td>P&lt;sub&gt;pr&lt;/sub&gt; (F, Po)</td>
<td>P&lt;sub&gt;ca&lt;/sub&gt; (Ag, F, Po)</td>
</tr>
<tr>
<td></td>
<td>Mary has a son.</td>
<td>Mary conceived a son.</td>
<td>Mary bore John a son.</td>
</tr>
<tr>
<td>II. MODIFICATIONAL</td>
<td>P&lt;sub&gt;st&lt;/sub&gt; (Pt)</td>
<td>P&lt;sub&gt;pr&lt;/sub&gt; (Pt)</td>
<td>P&lt;sub&gt;ca&lt;/sub&gt; (Ag, Pt)</td>
</tr>
<tr>
<td></td>
<td>The fox is dead.</td>
<td>The fox died.</td>
<td>Jim killed the fox.</td>
</tr>
<tr>
<td>II.A. Identificational</td>
<td>P&lt;sub&gt;st&lt;/sub&gt; (Pt, Id)</td>
<td>P&lt;sub&gt;pr&lt;/sub&gt; (Pt, Id)</td>
<td>P&lt;sub&gt;ca&lt;/sub&gt; (Ag, Pt, Id)</td>
</tr>
<tr>
<td></td>
<td>Abe is president.</td>
<td>Abe became president.</td>
<td>They elected Abe president.</td>
</tr>
<tr>
<td>II.B. Possessional</td>
<td>P&lt;sub&gt;st&lt;/sub&gt; (Pt, Po)</td>
<td>P&lt;sub&gt;pr&lt;/sub&gt; (Pt, Po)</td>
<td>P&lt;sub&gt;ca&lt;/sub&gt; (Ag, Pt, Po)</td>
</tr>
<tr>
<td></td>
<td>The pen belongs to Tom.</td>
<td>Tom received the pen.</td>
<td>Jim gave Tom the pen.</td>
</tr>
<tr>
<td>II.C. Experiential</td>
<td>P&lt;sub&gt;st&lt;/sub&gt; (Pt, Ex)</td>
<td>P&lt;sub&gt;pr&lt;/sub&gt; (Pt, Ex)</td>
<td>P&lt;sub&gt;ca&lt;/sub&gt; (Ag, Pt, Ex)</td>
</tr>
<tr>
<td></td>
<td>Sue knows the song.</td>
<td>Sue (passively) learned the song.</td>
<td>Jill taught Sue the song.</td>
</tr>
<tr>
<td>II.D. Directional</td>
<td>P&lt;sub&gt;st&lt;/sub&gt; (Pt, Dr)</td>
<td>P&lt;sub&gt;pr&lt;/sub&gt; (Pt, Dr)</td>
<td>P&lt;sub&gt;ca&lt;/sub&gt; (Ag, Pt, Dr)</td>
</tr>
<tr>
<td></td>
<td>The ball is in the river.</td>
<td>The ball fell into the river.</td>
<td>Art threw the ball into the river.</td>
</tr>
<tr>
<td>II.E. Temporal</td>
<td>P&lt;sub&gt;st&lt;/sub&gt; (Pt, Tp)</td>
<td>P&lt;sub&gt;pr&lt;/sub&gt; (Pt, Tp)</td>
<td>P&lt;sub&gt;ca&lt;/sub&gt; (Ag, Pt, Tp)</td>
</tr>
<tr>
<td>Directional</td>
<td>Lil is two years old.</td>
<td>The wood aged two years.</td>
<td>The lumbermen aged the wood for two years.</td>
</tr>
</tbody>
</table>
Other noun roles

The role of *instrument* is present with all causative predicates of the matrix. Often the instrument is not only present, but bound with the predicate—bound so closely that the predicate infers the likely identity of the instrument. In such cases, the prospect of redundancy diminishes the likelihood that the instrument will be overtly expressed. Hence sentence (23) is an unlikely alternative to sentence (22):

(22) Bill unlocked the door.
(23) Bill unlocked the door with a key.

and sentence (25) is an anomalous version of sentence (24):

(24) Sam walked to the store.
*(25) Sam walked to the store with his legs.

If the inferred instrument is replaced or modified in some manner not predicted by the predicate, it is more likely that the instrument will be manifested, as in the following:

(26) Bill unlocked the door with Claude's key.
(27) Sam walked to the store with the aid of a cane.

However, even in cases where the identity of the instrument is not inferred by the predicate, the probability that the instrument will be expressed does not seem to be as great as in the case of the bound roles shown in the matrix sentence types. I suggest, then, that instrument be considered present, but unbound, with causative predicates, lacking the close degree of semantic relationship with the predicate typically characterizing the bound roles, except in cases where the semantic features of particular predicates imply the use of a specific instrument or type of instrument.

The question arises whether instrument is present with any non-causative predicates. A role similar to instrument, perhaps identical with it (in the sense that both may be defined as non-instigative cause), does occur with some process predicates, as in sentence (28):

(28) Harold died of pneumonia.

Again, the specific semantic features of certain predicates imply the identity of the role filler, as *see* implies one's own eyes in (29):

(29) I saw the shark with my own eyes!

This same role may occur with certain state predicates as well, as in (30):
(30) Harold is sick with pneumonia.

A number of other roles are present, but unbound, in sentence types over substantial areas of the matrix. The role of beneficiary (as distinguished from that of possessor) is present with all causative predicates of the matrix. This role specifies the one for whose benefit (or, possibly, detriment) the action of the predicate takes place. Sentence (31) contains beneficiary \( \rightarrow \) Mom:

(31) Jenny swept the house for Mom.

In contrast with the bound roles we have labeled direction and temporal direction, which deal with the effect on the orientation in space and time, respectively, of the patient brought about by the predication, there are two unbound roles, location and time, which orient the predicate itself with respect to space and time.\(^{12}\) The following sentence is ambiguous:

(32) Tim fell in the lake.

If the lake manifests the direction role, the goal of Tim's motion, the sentence may be paraphrased:

(33) Tim fell into the lake.

On the other hand, if the lake manifests the unbound location role, the place where the predication took place, we may paraphrase sentence (32) as follows:

(34) Tim fell when he was in the lake.

Location is present, but unbound, with causative and process predicates, and time is present, but unbound, with all predicates of the matrix. Sentence (35) contains time \( \rightarrow \) for two hours last night and location \( \rightarrow \) in the living room:

(35) They worked on the puzzle for two hours last night in the living room.

Black Tai sentence types

If the matrix developed above is well-founded (albeit incomplete), it then provides us with a logical semantic starting point for an investigation of the syntax of sentences in a specific language. I shall now apply the matrix in approaching a study of sentence types in Black Tai. For each semantic sentence type in the matrix, I shall give examples of its manifestation in the language, when known, and make some observations about the syntactic features characterizing the sentence type. To close, I shall give brief attention to some of the surface features that mark the contrast be-
tween the underlying semantic types. This study is not intended to be exhaustive or highly detailed; rather, it serves as a general survey of Black Tai sentence types and as an illustration of the theory outlined above. 13

I. Formational sentence types 14

I.1. Pst (F)

(36) tōi5 kwa:m4 to4 sau2 According to the story they
tsiən4 vau6, mi4 fue1 pass-down tell exist husband
mie4 nun5 wife one

(37) mu6 ni6 fa6 lom4, mi4 be3. day this sky windy exist wave
Today it's windy, and there are waves.

(38) sau1 pai1 a:p2, mi4 kon4 they go bathe exist person
If they've gone bathing, is there an adult who has
gone to watch them?
?o6 pai1 bxn2 sau1 bau2 ?
large go watch them INTERROG

Sentences of this semantic type predicate the existence of the factitive referent. They typically employ the verb mi4 'to exist' and have no noun in the usual subject position preceding the verb. The topic of the sentence, manifesting the factitive role, is found following the verb. In (38) the factitive is filled by a noun phrase containing an embedded sentence used as a relative clause.

I.2 Pr (F)

(39) tap5 ?i6 hw4 lɔ3 mi4 beat this therefore exist

When he beat the gong at this node, relatives (magically) came into existence.
hɔ6 mi4 hwɔn1 ?ɔɔ2 relative exist Relative go-out

In this sentence, the factitive goes through the process of coming into existence. In Black Tai, a process is often signified by the use of two verbs: the first, a verb ordinarily manifesting a state, and the second, a verb indicating motion. In this case, the first verb is mi4 'to exist', the same verb used in (36) - (38), and the second is ?ɔɔ2 'to go out'. In sentences such as this, the presence of the second verb unambiguously marks the sentence as a process rather than a state (the reader will note the verb reduplication, a common feature of Black Tai).
I.3. \(P_{ca}\) (Ag, F)

I have no Black Tai examples of this sentence type. I believe that the large majority of causative predicates associated with factives, including all those with which I am familiar in Black Tai, are also bound with a possessor role. Such predicates normally imply that the thing formed becomes the possession of the one who formed it, unless another filler of the possessor role is made explicit. Thus the predicate \(+ make\) may be substituted for the predicate \(+ buy\) in sentences (i), (ii), and (v) of footnote 9 with analogous results. For this reason, I am classifying sentences containing predicates manifested by verbs such as \(+ make\) in I. A.3. below.

I. A.1. \(P_{st}\) (F, Po)

\[
\begin{align*}
(40) & \text{man}^4 \text{ bau}^2 \text{ he}^4 \text{ mi}^4 \text{ fue}^1. & \text{She doesn't have} \\
& \text{she NEG yet have husband} & \text{a husband yet.}
\end{align*}
\]

\[
\begin{align*}
(41) & \text{mua}^4 \text{ hot}^5 \text{ nan}^6 \text{ lo}^5 \text{ mi}^4 \text{ have} \\
& \text{go arrive there} & \text{When I get there} \\
& \text{bon}^2 \text{ kin}^1 \text{ bon}^2 \text{ ju}^2, & \text{and have a place} \\
& \text{place eat place dwell} & \text{to live, I'll} \\
& \text{təŋ}^2 \text{ tsi}^4 \text{ jet}^5 \text{ sw}^1 \text{ ma}:^4 \text{ həw}^3. & \text{write you a letter.}
\end{align*}
\]

\[
\begin{align*}
\text{then FUTURE make letter come for}
\end{align*}
\]

\[
\begin{align*}
(42) & \text{lo}^4 \text{ la}^1 \text{ via}^5 \text{ ko}^3 \text{ bau}^2 \text{ pai}^1 \text{ Oh, I have so much} \\
& \text{oh much work} & \text{work that I can't} \\
& \text{Neg go work} & \text{go anywhere.}
\end{align*}
\]

\[
\begin{align*}
& \text{ta:q}^4 \text{ 1əw}^1 \text{ laj}^3 \text{ lo}^1. & \text{direction any can}
\end{align*}
\]

The only difference between this sentence type and \(P_{st}\) (F), above, is the addition of the possessor role, manifested as the subject of \(mi^4\) in sentence (40). In (41) the subject is deleted, but the possessor role is still present in semantic structure. Thus, even though (41) has a surface structure identical in type to (36) - (38), it belongs to a different semantic sentence type.

Sentence (42) provides a less common illustration of verb ellipsis. In this case the subject pronoun and the verb \(mi^4\) have both been deleted.

I. A.2. \(P_{pr}\) (F, Po)

\[
\begin{align*}
(43) & \text{fu}^3 \text{ pıŋ}^4 \text{ nan}^6 \text{ mi}^4 \text{ lu}^5 \text{ The woman conceived} \\
& \text{person female that have child} & \text{a child in her womb.}
\end{align*}
\]

\[
\begin{align*}
?ə?^2 \text{ nan}^3 \text{ kuan}^1 \text{ pum}^1. & \text{go-out at in abdomen}
\end{align*}
\]

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(44) \(\text{man}^4 \text{pen}^1 \text{xon}^1 ?\circ^2\) She developed fur
she suffer fur come-out and a beard.
\(\text{pen}^1 \text{nuet}^2 ?\circ^2 \text{leu}^6\).
suffer beard come-out already

The noun filling the factitive role is formed as an acquisition of the noun filling the possessor role. The process of formation is marked by the secondary verb \(\text{?c}^2\) 'to go (come) out' in both examples. Again, the analogy to \(\text{P}^\text{c}_{\text{a}}\) (F) is clear, with the addition of the possessor noun role in the present case, manifested as a subject when expressed at the surface.

I. A.3. \(\text{P}^\text{c}_{\text{a}}\) (Ag, F, Po)

(45) \(\text{?a}:^i^3 \text{tai}^4 \text{tan}^3 \text{huan}^4 \text{myw}^2\) Father is going to
\text{father PUT build house new}
\(\text{myw}^3 \text{pa}^3 \text{ma}:^i^3\). for aunt widow

(46) \(\text{tai}^4 \text{lux}^1 \text{nam}^6 \text{lon}^4 \text{fon}^1\) Whenever the rains
\text{whenever water descend rain}
\(\text{tok}^2, \text{te}^6 \text{pa}^3 \text{mu}^2 \text{ma}^3 \text{pa}^3\) must build dam build
\(\text{fa}^i^1\). dam

(47) \(\text{he}^1 \text{xai}^6 \text{sa}^1 \text{ki}^3\) That fishnet you're
\text{fishnet now weave how-many}
\(\text{mu}^6 \text{te}^2 \text{le}^6 \text{le}^3, \text{em}^4 \text{thau}^3\) finished, ma'am?
\text{days then finish grandmother}

Sentence (45) gives the unmarked and unabbreviated surface structure for sentences of this semantic type:

subject NP VP object NP \(\text{myw}^3\) object NP

As is the general rule for Black Tai sentences containing causative predicates, the subject NP of (45), \(\text{?a}:^i^3\) 'father', manifests the agent. In (45), object \(\text{np}_1\), \(\text{huan}^4\) 'house', manifests factitive; and object \(\text{np}_2\), \(\text{ma}:^i^3\) 'widowed aunt', identifies the possessor. \(\text{myw}^3\), as an independent verb, has the meaning of 'to let or cause to occur'. In this, and certain other causative predicate sentence types, it occurs subordinate to the main predication, retaining only a portion of its independent force. However, the implication made by \(\text{myw}^3\) in (45) is evidently, 'Father is going to build a new house, and thus cause our widowed aunt to have (or acquire) a new house.' The agent is causing the factitive, not only to be formed, but to
assume a particular state with respect to a possessor. In most cases, as in (46) and (47), the possessor role is left unexpressed, with the implication that the thing formed becomes the possession of the one who forms it unless the context indicates otherwise.

I have referred earlier to the matter of subject deletion in connection with sentence (41). The omission of the subject is a very common feature of Black Tai sentences, occurring whenever the speaker deems it unnecessary to supply the information (usually because it is already known to the hearer). Sentences (46) and (47) delete the subject, thus leaving the agent role unexpressed.

In (47) the predicate under study, sa:n¹ 'to weave', is in an embedded sentence serving as a relative clause modifying he¹ 'fishnet'.

II. Modificational sentence types

II.1. Pst (Pt)

(48) fog⁴ nyw² la:i¹.
    wave large very

(49) tean⁵ tean⁵!
    pretty pretty

(50) men⁵ lo⁵ ?an⁶ na:³.
    correct that

(51) t'ai⁴ ?au¹ kan¹ ko³ dl¹.
    FUT take each-other good

(52) ba:³ noj⁶ ni⁶, man⁴
    fellow little this he

(53) luʔ⁵ nin⁴ muan⁵ la:i¹
    child hear happy very

This sentence type describes the state of an already existing entity, the patient. The usual full surface order:

subject NP - VP

is shown in sentence (48), with subject ellipsis common, as in (49). Sentence (50) shows the use of a demonstrative following the verb, in place of a preverbal subject. This appears to emphasize the verb while allowing identification of the topic. (51) shows an embedded sentence manifesting the patient (ko³ marks the following verb as
primary in the complex sentence).

This sentence type loses its predicative force when it functions as a noun-modifier phrase, as in (52). Sentence (53) shows a construction somewhat akin to English adverbials. The sentence luʔ5 muʔ5 la:i1 'I am very happy' is embedded in the sentence luʔ5 nin4 'I hear (that)'. The subject of the embedded sentence is deleted, being coreferential with the main subject.

II.2. P_pr (Pt)

(54) man4 nyu2 xun3. he large go-up He grew up.

(55) ta:i hun5 ?aʔ2. eye clear go-out His eye cleared up.

(56) bau2 ta:i1 ka:4 lxu1. NEG die EMPHATIC She didn't die at all.

(57) tәx4 thau3 nan6 ta:i1 sia1. hour old that die become-gone
     ko3 te2 nan6 bau2 lai3 muə4 since that NEG can go
     sak2 tuə5. ever
       Since the time that elderly man died, I haven't ever been able to go.

(58) ?au1 mai6 mxu2, jah:3 to1 man4 take wood more fear body it
     hak2 man4 laʔ2 sia1. break it rot become-gone
       We'd get more timber, lest the other logs break or rot away.

The type of sentence illustrated by (54) - (58) relates a process in which there is a change of state on the part of the patient. Sentence (54), in contrast with (48), shows the effect of the secondary verb of motion, in this case xun3 'to go up', in marking the process of becoming large as opposed to the state of being large. Sentence (56), lacking the secondary verb, is ambiguous and could be translated 'She didn't die at all' or 'She wasn't dead at all'. The context is needed to clarify the semantic structure. Sentences (57) and (58) show P_pr (Pt) embedded in primary sentences of other types.

II.3. P_ca (Ag, Pt)

(59) man4 teən2 muʔ5 ta:i1 ju2. He kept rubbing
     he then rub eye CONTINUE his eye.
(60) naː⁴ xaː³ lu₂⁵!  
don't kill child  

(61) man⁴ thim³ pu⁵ syw² nam⁶  
he hurl into water  

sia¹, bau² kin¹.  
become-gone NEG eat  

(62) te₄⁴ nan⁶ puə¹ teŋ²  
hour that ruler then  

h₃w³ kon⁴  
cause-to-happen person  

mue⁴ sap² ?au¹.  
go fetch take  

(63) ko³ te⁶ jet⁵ suə³ jet⁵  
must make trousers make  

suə³ ne⁴, h₃w³  
shirt cause-to-happen  

man⁴ nuŋ⁵ dî¹ nəi⁶ nuŋ⁵.  
they wear good small one  

(64) laŋ¹ faî⁴ laŋ¹ fun⁴  
buid fire build fire  

xun³, lo³ tom³ nam⁶.  
go up then boil water  

Don't kill me!  

He hurled the fruit into the water without eating it.  

Then the ruler dispatched people to go fetch him.  

We need to sew them some clothes so that they will look a little nice.  

Build a fire and boil some water.  

A simple transitive sentence manifesting the agent–patient relationship has the form:  

subject NP — VP — object NP  

as illustrated in sentence (59). Much more frequently, an elliptical form is used, as in (60) and (61). As (61) shows, objects as well as subjects may be optionally deleted.  

As we have argued earlier, the agent–patient relationship is basically a causative one, the agent causing an effect on the patient. This relationship is made explicit by the verb h₃w³ 'to cause, make to happen' in (62) and (63). h₃w³ is followed in both cases by an event, an embedded sentence, serving as the patient of the predicate + h₃w³. In (62) the agent is manifested by a noun. In (63) the agent and the patient are both manifested by sentences, related by h₃w³. In both (62) and (63) the agent affects the patient + embedded sentence, by causing the event in the embedded sentence to occur.
As discussed earlier, some agent-patient relating predicates inherently involve a change of state on the part of the patient. These are the predicates sometimes referred to as causatives in the more limited sense of the term. Sentences (60) and (64) illustrate these in Black Tai with xa:\^3' to kill' and tom\^3 'to boil'. In general, Black Tai verbs of this type are different lexically from those manifesting the corresponding process predicates, in contrast with English, which often employs the same lexical item, e.g. 'He boiled the water' and 'The water boiled'.

In other cases, the predicate relating the agent to the patient does not inherently result in a change of state. But the agent does affect the patient, not only to cause the immediate effect described by the predicate, but also to tend to cause a change of state, describable in a process sentence, as a direct consequence. Sentence (59) illustrates such a case. The immediate effect on the patient = eye is 'to be rubbed'. This tends to change the state of the eye as a direct consequence. Sentence (65), giving the expanded context from which (59) was taken, specifies the consequence as a process:

(65) \(\begin{array}{llllll}
\text{man}^4 & \text{t\~{e}an}^2 & \text{mup}^5 & \text{ta:}^1 & \text{ju}^2 \\
\text{he} & \text{then} & \text{rub} & \text{eye} & \text{CONTINUE}
\end{array}\)

\(\begin{array}{lll}
\text{ta:}^1 & \text{hun}^5 & \text{?o?}^2, \\
\text{eye} & \text{clear} & \text{go-out}
\end{array}\)

\(\begin{array}{ll}
\text{la}^3 & \text{nu\~{e}i}^2 \text{ ma:}^2 \\
\text{can} & \text{CLF} \text{ fruit}
\end{array}\)

He kept rubbing his eye. The eye cleared up, and he was able to pick up the piece of fruit.

II.A. **Modificational** subtypes—identificational

II.A.1. P\(_{st}\) (Pt, Id)

(66) \(\begin{array}{llllll}
\text{ba:}^3 & \text{n\~{o}i}^6 & \text{ni}^6 & \text{man}^4 \\
\text{fellow} & \text{small} & \text{this} & \text{he}
\end{array}\)

This little fellow, whose child is he?

\(\begin{array}{llll}
\text{men}^5 & \text{lu?}^5 & \text{fu}^3 & \text{lxw}^1? \\
\text{be-correct} & \text{child} & \text{person} & \text{which}
\end{array}\)

Are you named Liem?

(67) \(\begin{array}{llll}
\text{mun}^4 & \text{t\~{e}w}^5 & \text{li\~{e}m}^1, & \text{t\~{e}w}^5 \\
\text{you} & \text{be-named} & \text{Liem} & \text{correct}
\end{array}\)

\(\begin{array}{l}
bau^2? \\
\text{INTERROG}
\end{array}\)

(68) \(\begin{array}{llll}
\text{mi}^4 & \text{lu?}^5 & \text{?o?}^2 & \text{ma:}^4 \text{ pen}^1 \\
\text{have} & \text{child} & \text{come-out} & \text{come be}
\end{array}\)

They had a child; it was a son.

\(\begin{array}{l}
\text{lu?}^5 \text{ t\~{e}a:i}^4. \\
\text{child male}
\end{array}\)
(69)  büen¹ ni⁶ büen¹ têen¹ tai⁴ This is the first
month this month one Tai
hau⁴ lɔ¹ lɛ⁵.
we

At this point we begin to consider the state, or change of
state, of the patient, with respect to some specific 'semantic dimen-
sion', represented by the additional bound role introduced for each
subtype. Here, the state of the patient with respect to identity is
in question. Often such states in Black Tai are expressed by equa-
tional sentences of the type:

\[ \text{NP}_x \rightarrow \text{equational VP} \rightarrow \text{NP}_{2x} \]

as in sentences (66) and (67). The symbol \( x \) stands for the referent
of the NP. Thus \( \text{NP}_1 \) and \( \text{NP}_2 \) are obligatorily co-referential. Dele-
tion of \( \text{NP}_1 \) (as in (68) ) or the equational VP (as in (69) ) occurs
frequently. The optionality of the equational VP indicates that the
predicate is marked not only by the VP, but by the relationship \( \text{NP}_1 \times \text{NP}_{2x} \).

II.A.2. \( P_{pr} \) (Pt, Id)

(70)  man⁴ pen¹ kon⁴ ?ɔ?² swen⁴ kau². She turned back
she be person go-out like formerly into a human
be

(71)  pen¹ fu³ fil¹ ?ɔ?². She became a demon.
be being spirit go-out

(72)  sɔn¹ ?an¹ ma⁴ to² kan¹ The two pieces are
two thing come join one-another become one piece.
pen¹ ?an¹ nun⁵.
become thing one

If the verb pen¹ 'to be' is followed by a secondary verb ?ɔ?²
'to go out', the process of changing identity is unambiguously marked,
as in (70) and (71). If the secondary verb is omitted, as in (72),
we depend on the context to clarify whether a process (e.g. (72) ) or
a state (e.g. (68) ) is intended.

II.A.3. \( P_{ca} \) (Ag, Pt, Id)

(73)  sau² xɛ⁵ ?a:i³ ma:² hut² They called him father
they call father CLF blemish

sen¹ pau¹ sin⁶.
infinite tumor

Countless Bumps.
In these sentences, an agent causes a patient to assume a particular identity. In (73) only a single verb is employed. (74) and (75) require more than one verb, in the following pattern:\textsuperscript{15}

\[ \text{NP}_1 \rightarrow \text{VP} \rightarrow \text{NP}_{2x} \rightarrow (\text{hrw}^3) \rightarrow \text{equational VP} \rightarrow \text{NP}_{3x} \]

\text{NP}_1 \text{ (when present)} manifests the agent, and \text{NP}_2 \text{ the patient, with VP relating them in a typical agent--patient relationship. \text{NP}_3 \ manifests the identity, and is co-referential with \text{NP}_2. The equational VP relates \text{NP}_2 \text{ and } \text{NP}_3 \text{ in a manner typical of patient and identity. In (75), the presence of hrw}^3 \text{ 'cause to happen' makes the causal notion explicit. The sentence containing the equational VP is embedded in the one containing VP.}

II.B. \textbf{Modificational subtypes--acquisitional}

II.B.1. P_{st} (Pt, Po)

(76) \text{nan}^1 \text{nan}^6 \text{xa}^1 \text{?a:i}^3 \text{luq}^4. \quad \text{That belongs to you.}

(77) \text{na:}^4 \text{?au}^1 \text{pai}^1 \text{?i}^4, \quad \text{Don't take that;}
\text{d}^1 \text{take go IMPER}

(78) \text{mu}^6 \text{pu}^5 \text{ko}^3 \text{mu}^6 \text{hu}^4 \quad \text{One of these days,}
\text{day tomorrow day day-after-}
\text{fu}^3 \text{nig}^4 \text{xa}^1 \text{ko}^3 \text{me}

\text{tomorrow person female me}
\[ t\beta i^4 \text{ ma}^4 \text{ l}^1. \]
FUT come

A neutral surface form for the sentence type in which the state of possession is predicated is illustrated by (76) and may be diagramed as follows:

\[
S \\
\text{topic NP} \\
?a^n1 \quad \text{nan}^6 \\
\text{possession NP} \\
\text{NH} \\
\text{possession} \\
?a:i^3 \quad \text{Iun}^4 \\
x\eta^n1
\]

The subscripts \(x\) and \(y\) indicate referents. In the possession NP, the noun head denoting the possession is co-referential with the topic NP. Sentence (77) shows that the topic may be placed following the possession NP and expressed as a demonstrative. Possibly this serves to highlight the possession NP while still providing for overt identification of the topic.

No verb need be used in this construction, though an equational verb such as \(\text{pen}^1 \ 'to be'\) is permitted. In effect, \(P_{\text{st}}\) has as a primary surface signal, not a verb, but the construction described above. When the state of possession is not being predicated, the construction is reduced to a simple possession NP serving to manifest any of a variety of roles in a larger sentence, as illustrated by (78).

II.B.2. \(P_{pr}\) (Pt, Po)

(79) \[ \text{sau}^1 \text{ k}^3 \ t\beta i^4 \text{ lai}^3 \text{ hok}^5-\text{bo}^3 \text{ If they receive a} \]
\[ \text{they} \quad \text{FUT} \quad \text{obtain} \quad \text{scholarship} \]
\[ \text{scholarship} \ldots \]
\[ \text{l}^1 \ldots. \]

(80) \[ \text{lai}^3 \text{ pa}:^1 \text{ bau}^2? \text{ Did you catch} \]
\[ \text{obtain} \quad \text{fish} \quad \text{INTERROG} \]
\[ \text{any fish?} \]

The verb \(\text{lai}^3 \ 'to obtain, receive, acquire'\), denotes the process of coming into possession, in a passive sense. The subject, when expressed, fills the role of possessor, and the object the role of patient.

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II.B.3. P_{ca} \ (Ag, \ Pt, \ Po)

(81) hau⁴ so¹ hot⁵ pun⁴ we request to PLURAL

tɕǐŋ²-fu³ sau² tɕɔî⁵ jwə¹ government they help

hau⁴ pun⁴ pap⁵ sw¹ we PLURAL book

pap⁵ sa:n¹ ni⁶ na:³. book this

(82) ?a:i³ tɕi⁴ ?au¹ fa:i³ ?au¹ father FUT take cloth take

ηxn⁴ hɔw³ su¹. silver to you

(83) xa:i¹ to¹ mu¹ nan⁶ hɔw³ sau² sell CLF pig that to them

sia¹ ?i⁴. become gone IMPER

(84) xɔi³ tɕi⁴ paï¹ sw⁶ tɕwən⁵ I FUT go buy goods

nan³ sau² ma:⁴. at them

(85) tɔŋ² ?au¹ lai³ nuəj² ma:?² She got hold of the then take acquire CLF fruit piece of fruit.

nan⁶, that

We have requested that the government provide us with the textbooks.

I will give possessions to you.

Sell that pig to them.

I'm going to go buy some things from them, and then return.

Many of the predicates associated with this sentence type are bound with two possessor¹⁶ roles: a prior possessor, which I shall label Po₁, and a subsequent possessor, which I shall label Po₂. The agent is often co-referential with one or the other possessor, causing transfer of the patient to or from his own possession. In sentence (81) the surface form is:

subject NP - VP - object NP₁ - object NP₂

In this case, object NP₁ manifests the subsequent possessor and object NP₂ the patient. In (82) and (83) the order is reversed, with object NP₁ manifesting patient (Pt) and object NP₂ manifesting Po₂. A second verb, hɔw³ 'to, for', is inserted between the two objects, hɔw³ retaining only a portion of its potential causative force. A third verb,
such as si₆¹ 'become gone' in (83), may be added to reinforce the change of state undergone by the patient. In (81) - (83), Ag and Po₁ are co-referential, realized in the subject NP (when expressed). In (84), however, Ag and Po₂ are co-referential. The predicate of (85) is bound only with one possessor, co-referential with agent, but not manifested in this Black Tai sentence. When agent and possessor are thus co-referential, Black Tai often uses a compound verb -- a typical filler of Pr ca, in this case ?au¹ 'to take', followed by lai³ 'to obtain, acquire' (the usual referent in Pr (Pt, Po) sentences). The compound verb overtly marks the dual role played by the subject, as the agent causer and the possessor goal in the acquisition process.

II.C. Modificational subtypes -- experiential

II.C.1. Pₘₜ (Pt, Ex)

(86)  man₄ ha:³ na:³ sau².  He was ashamed (to be with) them.

he be-ashamed them

(87)  ja:n³ sau¹ teom¹ nam⁶.  I'm afraid they will be submerged.

fear they be-submerged water

(88)  sau¹ bau² hu⁶ loi⁴ na:³.  They don't know how to swim.

they NEG know swim

(89)  ?e² po⁶ fxwl.  I'd like to meet them all.

want meet anyone

(90)  ku¹ ha:² tei⁴ ?a:i¹.  I will have a sweet-smelling fragrance like this.

I FUT have-a-fragrance

hom¹ sweet-smelling like this

The state of the patient is now described with respect to the psychological experience of another, called the experiencer. A simple surface form is illustrated by (86), in which the experiencer is topicalized as subject, and the patient is the object of the verb. Very often the patient is manifested by an embedded sentence, as in (87) - (89). Sentence (90) shows a much rarer configuration. The patient is topicalized as subject because of the lexical nature of the verb, and the experiencer, in the case of this verb, is left indefinite by surface deletion.

II.C.2. Pₚᵣ (Pt, Ex)

(91)  man₄ teo₉² nhu⁴ hen¹ ko¹.  Then he went and saw a fruit tree.

he then go see plant

ma:² nua⁵.  fruit one

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(92) luʔ⁵ nin⁴ muen⁵ la:i¹
cild hear happy very
I'm very happy to hear that.

(93) təw² ?au¹ xa:n³ xot²
remembe take CLF expression
You can recall the things we've said.

sop² sum⁴ xo:i³ vau⁶ nan⁶
mouth we(exclusive) say that

(94) ... swan⁴ bau² nam² hɔt⁵ ło¹. ... as though I
like NEG think arrive hadn't thought about them.

As in (86) - (89), the normal order here (before elliptical deletions) is experiencer topicalized as subject, followed by verb, followed by patient as object. The nature of the verb, and/or the context, may convey the idea of process or change of state. Or the process notion may be conveyed or reinforced by the presence of a dynamic secondary verb, such as ?au¹ 'to take', or hɔt⁵ 'to arrive' in (93) and (94) respectively.

II.C.3. P_cà (Ag, Pt, Ex)

(95) ?a:i³ ?em⁴ man⁴ tha:m¹
father mother her ask
The girl's parents asked her that question.

luʔ⁵ nin⁴ man⁴ swan⁴ nan⁶.
cild female her manner that

(96) vau⁶ sin⁶ həw³ sau¹ ?e².
say like-that to them
Please say that to them.

(97) təan² təi⁴ vau⁶ həw³ sau¹.
then FUT say to them
Then I'll tell them: "...".

vau⁶: ".....".
say (quotation)

(98) təan² təi⁴ məw⁴ to⁴ su² sau¹.
then FUT go tell to them
I'll go and tell them.

(99) ?a:i³ ?em⁴ san² san¹ swan⁴
father mother remind manner
We're reminding you of this; remember what we've said.

ɨəw¹, luʔ⁵ ɨo³ təw².
which child so remember

(100) xo:i³ la:m⁶ thoi¹,
I startle-deceptively that's-all
I was just startling you; there's nothing there at all.

kə³ bau² mi⁴ san¹ ka:⁴ ɨəw¹.
NEG exist anything at all

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In sentences of this type the agent impresses the patient on the mind of the experiencer. Typically this is accomplished through the act of communication, in which case the agent is the communicator, the experiencer the recipient, and the patient the content of the communication.

In Black Tai sentences with three-term predicates (i.e. bound with three roles), such as those of this type, the speaker normally elides one or more roles from surface manifestation. Sentence (95) provides an infrequent example containing fillers of all three roles--agent, patient, and experiencer. In this case, the surface structure is:

subject NP - VP - object NP₁ - object NP₂

with agent expressed by the subject NP, experiencer by object NP₁, and patient by object NP₂. Sentence (96) reverses the roles manifested by the objects and inserts ḫwɔ³ 'to' before the second subject, in a manner analogous to (82) and (83). When the patient is expressed by an extended message, it is necessary to externalize the message from the rest of the sentence. Sentence (97) gives an illustration of this. On the other hand, the content of the message may not be referred to at all, as in (98).

Sentence (99) is a compound sentence, showing causation in the predicate sān² sān¹ 'to remind', followed by the consequential process in the mind of the experiencer--tfa² 'to remember'.

In sentence (101), the agent and experiencer are co-referential, this fact being marked by a compound verb by which the subject is seen to be both the agent causer and the experiencer goal, in a manner analogous with that of (85) above.

II.D. Modificational subtypes--directional

II.D.1. Pst (Pt, Dr)

(102) man⁴ ju² sān³ kuan¹ pa:² He lived in the
     he live at inside forest as before.

     swān⁴ kau².
     manner former

(103) man⁴ ju² ka:⁴ ṅo?⁵ sau². He stayed outside
     he stay at outside them the group.
With state predicates, the direction role simply indicates the orientation of the patient in space. Ju² 'to be located' typically acts as the verb in sentences of this type. Often this verb is coupled with a locative marker, such as nan³ 'at' in (102), and ka:⁴ 'at' in (103). The patient, when expressed, is in subject position, and NP manifesting direction follows the verb and any locative markers. Occasionally the verb is omitted, as in (105).

II.D.2. P_r (Pt, Dr)

(106) nuαi² ma:² nan⁶ lai¹ nam⁶ pai¹. The fruit CLF fruit that drift water go drifted down the river.
(107) tok² syw² ken² ta:¹ man⁴. It fell onto his eye. fall go-onto eyeball him
(108) nam⁶ xun³ lεu⁶ lε?². The water has risen. water ascend COMPLETED
(109) ja:n³ sau¹ teom¹ nam⁶. I'm afraid they will fear they be-submerged water be submerged.

The direction role, when expressed, now specifies the direction of the patient's motion through space. The process of progression from one location to another is marked by the lexical nature of the verb, plus a reinforcing secondary verb of motion, as in (106), by the lexical content of the verb alone, as in (108), or not marked at all, as in (109), where the verb could indicate a state. In the latter case, the listener depends on the context to clarify the meaning.

II.D.3. P_a (Ag, Pt, Dr)

(110) kiu² xau³ sau¹ xau³ ma:⁴ harvest rice take rice come

huan⁴ met² l:¹ kwa:⁴? home completely INTERROG

(111) lε² sui¹ man⁴ lε?² want push him go-out

sie¹, ha:⁴ man⁴ kα³ become-gone but he

Has all the rice been harvested and brought home?

He tried to push the child off his lap, but the child didn't get off.
(112) man⁴ thim³ pvw⁵ syw² nam⁶
he hurl go into water
He hurled the fruit into the water.

sie¹
become-gone

(113) hau⁴ tæn² syw² hail¹
we then put-into container
Then we put it in the storage jug and leave it for a month or more.

væj⁶ bewæn¹ nwe₅ bewæn¹ laːj¹.
leave month one month more

As is usual for three-term predicates in Black Tai, ellipsis of one or more of the manifesting noun phrases is common, and this is the case with sentences (110) - (113). The composite surface pattern that emerges, however, is as follows:

subject NP₁ - VP - object NP₁ - VP₂ - object NP₂ - (VP₃)

The agent → subject NP acts on the patient → object NP₁ in the manner described by VP₁ to bring about motion of the patient described by VP₂ with respect to a location (generally, to a new location) → object NP₂. The change-of-location process on the part of the patient may be reinforced by a third verb, such as sie¹ 'become gone' in (111) and (112). Sentence (112) contains all of the above surface elements except object NP₁. Sentence (113) omits VP₁ and object NP₁, with VP₂ syw² assuming a causative function 'put into', rather than simply the process function 'go into' of (112).

II.E. Modificational subtypes--temporal

II.E.1. Pst (Pt, Tp)
I have found no sentences of this semantic type in Black Tai. Statements of age seem to be considered only as processes, as discussed in II.E.2. below.

II.E.2. Pr (Pt, Tp)

(114) ṭæm⁴ hot⁵ haː³ sip² lew⁶. I had already reached mother reach five ten COMPLETED fifty years of age.

(115) man⁴ nyw² xwñ³ hot⁵ tuai³ She grew up and reached the age of 16.
sip² hok² pl¹.
ten six year
(116) $\text{sin}^6 \text{fu}^3 \text{niŋ}^4 \text{nan}^6 \text{t$\text{san}^2$} \text{So 9 months passed for}$
\text{person female that then}$
\text{lai}^3 \text{kau}^3 \text{bwan}^1, \text{hot}^5 \text{m$\text{wu}^6$} \text{time came for her to}$
\text{attain nine month reach day}$
\text{hot}^5 \text{bwan}^1 \text{g$\text{e}^2$��$\text{u}^2$.}$
\text{reach month give-birth}$

(117) $\text{man}^4 \text{ko}^3 \text{si}^4 \text{sip}^2 \text{ha:}^3 \text{pi}^1$ \text{He was only 45 years}$
\text{he four ten five year old.}$
\text{thoi}^1$. \text{that's-all}$

(118) $\text{tuei}^3 \text{man}^4 \text{lai}^3 \text{si}^2 \text{sip}^2$ \text{He was only 45 years}$
\text{age him attain four ten old.}$
\text{ha:}^3 \text{pi}^1 \text{thoi}^1$. \text{five year that's-all}$

In these sentences, the process is a progression through time on the part of the patient. The NP manifesting the patient is the subject of a very limited set of verbs, and the time phrase manifesting temporal direction is the object. In the case of statements of age, the surface verb may be omitted, as in (117). However, the process idea is apparently retained, since elicited paraphrases such as (118) employ the verbs $\text{lai}^3$ 'to attain, pass through (a period of time)' or $\text{hot}^5$ 'to attain, reach'.

II.E.3. $\text{Pca (Ag, Pt, Tp)}$

(119) $\text{hau}^4 \text{t$\text{san}^2$ s$\text{wu}^2$ hai}^1$ \text{Then we put it into}$
\text{we then put-into container}$
\text{vai}^6, \text{bwan}^1 \text{nuŋ}^5 \text{bwan}^1 \text{la:$\text{i}^1$.}$ \text{the storage jug and}$
\text{leave month one month more}$ \text{leave it for a month}$
\text{or more.}$

Little study has been made of this sentence type. It appears that sentence (119) may illustrate it, using the verb $\text{vai}^6$ in the sense of 'leave to age or ferment'. The resulting process of progression through time may be marked by optionally inserting $\text{lai}^3$ 'to attain, pass through' before $\text{bwan}^1 \text{nuŋ}^5 \text{bwan}^1 \text{la:$\text{i}^1$.} \text{'a month or more'.}$

Ambient forms

Some of the sentence types described above have sub-types which I shall label ambient, in which no unique manifestation is given the patient because the patient is not clearly present in the semantic structure, or, if present, is suppressed to the point
where it always shares the manifestation of the agent by the nature of the predicate.

To begin with, statements of weather, which may be considered ambient in English, may not be ambient in Black Tai:

(120) mu₆ ni₆ fa:₆ let² hon₆. Today it's sunny and
day this sky sunny warm warm.

Since fa:₆ 'sky' may be used in such sentences, unless it can be shown the fa:₆ carries no semantic content to a Black Tai speaker, we must assume that this is a routine Pₚₜ (Pt) sentence.

On the other hand, Black Tai does have sentences that are evidently ambient in terms of Black Tai semantic structure. Ambient sentence types which have been noted include the following:

1) Pₚₜ

(121) tay⁴ lxw¹ tæn² tai⁴ jian¹ Whenever it is peace-
time which then FUT peaceful ful, we will be able
tai⁴ hæ:n⁴, lai³ muə⁴ to go home.
FUT peaceful be-able go
hwaŋ⁴ siə¹ le⁴.
home become-gone

2) Pₚₐ (Ag)

(122) man⁴ lɔ³ ku⁴ hai³ ku⁴ lɛn⁵ She cried and ran
she so both cry and run away.
siə¹.
become-gone

(123) sau¹ bau² hu⁶ loj⁴ na:³. They don't know how
they NEG know swim to swim.

Sentences (122) and (123) are analogous with sentence (13), discussed earlier. Patient may be present, but only in some non-
proeminent sense, being obligatorily co-referential with agent.
The agent causes itself to undergo the effect described by the predi-
cation. I am writing the formula for the sentence type as though
patient were entirely absent.

Sentences of this type contrast with sentences containing
verbs such as ?a:p² 'to bathe', in which the non-manifestation of
patient, while common, is an optional feature of surface syntax.
The sentences in which ?a:p² appears, then, are not ambient, but
are of the sentence type Pₚₐ (Ag, Pt). The following sentences
containing ?a:p² show instances of deleting the NP manifesting the
patient (124), and expressing it (125) - (126):

(124) hau⁴ pai¹ ʔa:p² nam⁶.  
we go bath the water  
We're going bathing.

(125) mun⁴ lo³ bi¹ hue¹ mun⁴,  
you comb head you  
ʔa:p² hue¹ mun⁴.  
bathe head you

(126) hau⁴ pai¹ ʔa:p² to¹ ʔa:p²  
we go bath the body bathe  
kin⁴ huy³ man⁴  
body cause-to-happen it

pe?⁵ sie¹.  
clean

3) Pca (Ag, Id)

• (127) man⁴ tæn² bien²  
she then change-herself  
jet⁵ thuæn¹ bo?².  
act-as CLF flower

She turned into a flower.

In this sentence, bien² conveys the meaning of a self-instigated change of identity, a causation, not a passive process.

4) Pca (Ag, Dr)

(128) tær⁴ nan⁶ man⁴ lo³ ma:⁴ huan⁴.  
At that time he hour that he return home returned home.

(129) leu⁶ tæn² tæi⁴ lon⁴  
COMPLETED then FUT descend  
pai¹ bla:u¹.  
go Bao-Loc

Then I'll go down to Bao Loc.

(130) hau⁴ pa:i⁵ srk² pa:i⁵ swe¹  
we flee enemy flee enemy  
mwe⁴.  
go

We fled from the enemy.

(131) hai¹ tuk² he¹ bau²?  
go cast net INTERROG

Have you gone fishing?
(132)  tɔɔm⁶  pai¹  sw⁶  tɔwəŋ⁵  maː⁴.  I've just returned  
just go buy goods return  from going shopping.

Predicates of self-instigated change of location are a very common source of patient-suppressed sentences. The verb may be simple, as in (128), or compounded, as in (129). The manifestation of the direction role may be a simple destination, as in (128) and (129), another location related to the event, such as the source location 'enemy' in (130), or an embedded sentence expressing the destination in terms of an event which is the purpose of the motion, such as the embedded sentence tuk²  he¹ 'to cast a fishnet' in (131). In (132) the embedded sentence sw⁶  tɔwəŋ⁵ 'to buy goods' serves both to manifest direction (i.e. destination) for the predicate → pai¹ 'to go' and direction (i.e. source location) for the predicate → maː⁴ 'to return'.¹⁷

5) Ppr (Tp)

(133)  bɯɛn¹  tɔiæn¹  maː⁴  mɔw²  Moreover, the New  
month first come moreover Year is coming.

In this sentence, temporal direction is expressed as subject NP.

Other roles in Black Tai

The following sentences illustrate briefly the usage in Black Tai of certain roles regarded as basically unbound, and not included in the clusters of the basic matrix. Examples include only a portion of the sentence types with which such roles occur:

Instrument (I)

Pca (Ag, F, Po, I)

(134)  hau⁴  ?au¹  maï¹  pa:n²  nan⁶  We used that hemp  
we take thread hemp that  thread to weave  
sa:n¹  he¹.  weave fishnet  fishnets.

Pca (Ag, Pt, I)

(135)  ʔɔ³  ?au¹  ʔaːn²  tɔ¹  ?au¹  So they used a basin  
take basin catch take to catch the blood.

1wɔt⁵.  blood

Pca (Ag, I)
(136) \(?au_1 \ hwa^4 \ païl_1.\) They went by boat.

The usual way of expressing instrument in Black Tai sentences with causative predicates is through the use of \(?au_1 \ 'to take'\) (or possibly ha:\(l_1 \ 'to seek'\)), whose object manifests the instrument of the predication identified by the following verb. The subject of \(?au_1\) identifies the agent employing the instrument.

An instrument-like role (i.e. like instrument, it identifies non-instigative cause) is found with some process predicates, as illustrated by (137):

\[
P_{pr} \ (Pt, \ I)
\]

(137) \(\text{man}^4 \ \text{pen}^1 \ \text{tep}^2 \ \text{pot}^2 \ \text{ta}i_1\). He died of lung
he suffer disease lung die disease.

or, as paraphrased by (138):

(138) \(\text{man}^4 \ \text{ta}i_1 \ \text{tep}^2 \ \text{pot}^2\). He died of lung
he die disease lung disease.

Note that \(?au_1 \ 'to take'\) is not used to mark the instrument (or non-instigative cause) when the main predication is a process—in this case \(\text{ta}i_1\) 'to die'.

**Beneficiary (B)**

\[
P_{ca} \ (Ag, \ Pt, \ B)
\]

(139) \(?em^4 \ \text{nuai}^2 \ \text{la}i_1, \ \text{lu}^5 \ \text{mun}^4\) I'm very tired--
mother tired very child you go sweep the
\(\text{paï}l_1 \ \text{feu}^3 \ \text{hwa}^4 \ \text{hwa}^3 \ ?em^4 \ ?i^4\). go sweep house for mother IMPER

\(\text{P}_{ca} \ (Ag, \ Pt, \ Po, \ B)\)

(140) \(\text{ku}^1 \ \text{va}n^4 \ \text{mun}^4 \ \text{paï}l_1 \ \text{xa}i_1 \ \text{to}^1\) Please go sell the
I request you go sell CLF pig to them for me.

\(\text{mu}^1 \ \text{ta}^6 \ \text{hwa}^3 \ \text{sau}^2 \ \text{hwa}^3 \ \text{ku}^1\) pig that to them for me

\(\text{sia}^1 \ ?i^4\). become-gone IMPER

\(\text{hwa}^3 \ 'for'\) is a characteristic marker of beneficiary, as shown in both (139) and (140). In (140) \(\text{hwa}^3\) occurs twice, marking the goal or subsequent possessor, \(\text{sau}^2\) 'them', and the beneficiary \(\text{ku}^1 \ 'me'\).
Sentence (41) - (43) illustrate the occurrence of location, an unbound role specifying the orientation of the predication in space. The surface form resembles that of Pst (Pt, Dr) sentences such as (102) and (103); it appears, in fact, that an unbound location is manifested by an embedded Pst (Pt, Dr) sentence.

In sentence (42) I believe that the direction role bound with the predicate + pai1 'to go' is manifested by the embedded sentence with predicate + ?a:p2 'to bathe'. In other words, the destination is expressed primarily in terms of an event, as in (31). In turn there is a location role unbound with the predicate + ?a:p2, which is manifested by nam6 'river'.

Since all events occur in space, it seems apparent that all sentences containing process and causative predicates may include a reference to location. The question arises whether such references are appropriate with state predicates. Sentence (44) seems to give such an instance:

Pst (F, Po, L)

(44) nam3 lam4 mo5 ten4 ka:2 na:3 He had blemishes on CLF body entire face all over his body.

ta:1 tin1 mu4 pen1 tum2 eye foot hand suffer pimple

pen1 pau1 met2. suffer tumor completely
The above sentences give a sampling of the widespread applicability of the time role, an unbound role denoting the orientation of the predication in time. It is probably true that the time role is present with every sentence type in the matrix; that is, that any predication may be made with reference to time in some form. The reference may be to a fixed point of time, as in (145) - (147), time relative to some other event, as in (148) - (149), or a duration of time, such as in (150). Specific time information manifesting the time role in a sentence reinforces and further specifies any general time information conveyed by tense and aspect markers.
Surface features reflecting contrasts between sentence types

Once the sentences of Black Tai have thus been categorized, subject to further refinement, according to their semantic type, fruitful study may be made of the syntactic and lexical characteristics of each type, and of those features that mark the underlying semantic contrast between one type and another. Such a study, in any detail, is beyond the scope of this paper. However, a few remarks should serve to illustrate further how Black Tai sentences differ from one another at the surface, and to demonstrate the value of a semantic approach to the syntax and lexicon of a language. First, we may summarize the means by which the various predicate categories are distinguished by their surface characteristics. In sentences of a given set of roles (such as the identificational sub-group) there is little problem distinguishing between causative sentences (i.e. sentences containing \( P_{ca} \)) and process sentences. The verbs are generally lexically distinct, the presence of agent with \( P_{ca} \) increases the number of NP's in a non-elliptical sentence, and, for three-term causative predicates, a second VP is often used to separate and distinguish the object NP's, as in (74).

The difference between process sentences and corresponding state sentences is not as great. The number of NP's allowed does not change. Sometimes the lexical form of the basic verb only occurs in one or the other type (e.g. \( ju^2 \) 'be located' only manifests \( P_{st} \)), but in many cases, the same basic verb form is used for both types. We then depend on the addition of a dynamic secondary verb (such as \( ?o?^2 \) 'go out' in (70) ) to mark the sentence as a process, that is, a dynamic event, not just a state. This dynamic secondary verb is a major marker of processes as opposed to states. Sometimes even this marker may be omitted from a process sentence, as in (56), in which case the surface form is ambiguous in isolation and context becomes the determining factor in deciphering the meaning.

Two semantically similar but distinct sentence types may have important structural or lexical contrasts marking the shade of difference that does exist between them semantically. For example, the structure diagramed above for sentence (76), a sentence of the type \( P_{st} \ (Pt, Po) \), is never found in Black Tai sentences of the type \( P_{st} \ (F, Po) \). Conversely, there is some question whether the structure characterizing \( P_{st} \ (F, Po) \) sentences, as illustrated by sentence (40) is to be found in Black Tai \( P_{st} \ (P^t, Po) \) sentences, and if so, how commonly. It is possible, in fact, that the verb \( mi^4 \), so characteristic of state and process sentences containing factives as shown earlier in the paper, does not occur independently in sentences containing patients, and thus may serve as a marker of formational sentences, a function which the English verb \( have \) definitely does not fill.

In Black Tai, a particular surface structure may often be derivable from more than one semantic sentence type. However,
sentences of the same surface structure but derived from differing semantic types may well have differing paraphrase potential. The following two Black Tai sentences illustrate this point:

\[ P_{ca} (Ag, Pt, Dr) \]

(151) \( ?a:i^3 \ \text{pam}^3 \ \text{ko}^1 \ \text{mai}^6 \ \text{hak}^2 \ \text{lon}^4. \) Father chopped the tree down.

\[ P_{st} (Pt, Ex) \]

(152) \( ?a:i^3 \ \text{ja:n}^3 \ \text{ko}^1 \ \text{mai}^6 \ \text{hak}^2 \ \text{lon}^4. \) Father was afraid the tree would break and fall down.

In (151) the subject NP manifests agent, causing the patient \(+\ \text{ko}^1 \ \text{mai}^6\) to be chopped and thus to change locations. In (152) the subject NP manifests experiencer in a state of fear. The patient which is the object of fear is an embedded sentence \(+\ \text{ko}^1 \ \text{mai}^6 \ \text{hak}^2 \ \text{lon}^4\). Sentence (151), a causative construction, may be paraphrased as (153):

(153) \( ?a:i^3 \ \text{pam}^3 \ \text{ko}^1 \ \text{mai}^6 \) Father chopped the tree down.

\[ \text{hzw}^3 \ \text{man}^4 \ \text{hak}^2 \ \text{lon}^4. \]

\[ \text{cause-to-happen} \ \text{break} \ \text{go-down} \]

However, a similar insertion of \( \text{hzw}^3 \ \text{man}^4 \) would not be permitted in sentence (152) containing a state predicate. Thus (154) is ungrammatical:

(154) \( ?a:i^3 \ \text{ja:n}^3 \ \text{ko}^1 \ \text{mai}^6 \ \text{hzw}^3 \)

\[ \text{father} \ \text{feared} \ \text{tree} \ \text{cause-to-happen} \]

\[ \text{man}^4 \ \text{hak}^2 \ \text{lon}^4. \]

\[ \text{it} \ \text{break} \ \text{go-down} \]

Sentences (155) and (156) provide further illustration of how structurally similar but semantically distinct sentences differ in paraphrase potential:

\[ P_{ca} (Ag, F, Po) \]

(155) \( ?a:i^3 \ \text{tai}^4 \ \text{tao}^3 \ \text{hwan}^4 \ \text{myw}^2 \)

\[ \text{father} \ \text{FUT} \ \text{build} \ \text{house} \ \text{new} \]

\[ \text{hzw}^3 \ \text{sau}^1. \]

\[ \text{for} \ \text{them} \]

\[ P_{ca} (Ag, Pt, Po) \]
Sentence (156), containing an already existing patient, may be paraphrased in a manner that conveys (in a figurative sense only) procurement of the patient for the purpose intended, thus:

(157) ʔa:i³ təi¹ xa:i¹ hwan⁴ myw² hwy³ saul₁, sell to them

Father is going to sell a new house to them.

But sentence (155), containing a factitive being brought into existence by the sentence event, cannot be paraphrased in a procurement manner. Sentence (158) is ungrammatical:

*158) ʔa:i³ təi¹ ?au¹ hwan⁴ myw² tan³ hwy³ saul₁, take house new build for them

Conclusion

This introduction to Black Tai sentence types, while rather lengthy, is nonetheless somewhat cursory and, no doubt, raises as many questions as it answers. What has been accomplished, I believe, has been, 1) to provide a semantic framework, viable yet capable of further refinement and expansion, for more detailed semantic and syntactic analysis of Black Tai sentences, 2) to show something of the productivity of approaching the syntax of Black Tai from the semantic framework provided, and 3) to contribute, by means of this framework, to the study of how the syntax of any given language may be approached by exploiting the common semantic characteristics of languages throughout the world.

KEY TO ABBREVIATIONS AND SYMBOLS

Semantic terms

Ag  agent  The one causing the formation of a factitive, or acting upon an already existing patient to cause an effect on the patient.

B  beneficiary  The one for whose benefit (or possibly detriment) the event occurs.
Dr  direction  The direction of a patient's motion through space, characteristically (but not necessarily) expressed in special terms; or, in the case of a state predicate, the orientation of the patient in space.

Ex  experiencer  The one in whose mind the event or state described by the predicate occurs.

F  factitive  The one brought into existence by the event described by the predicate; or, in the case of a state predicate, the one whose existence is predicated.

I  instrument  The non-instigative cause of an event.

Id  identity  A further specification of the identity of the patient.

L  location  The orientation of a predication in space.

Pca  causative predicate  Specifies the action of an agent to cause the formation of a factitive, or to cause an effect on a patient.

Pr  process predicate  Specifies the formation of a factitive or the change of state of a patient.

Ps  state predicate  Specifies the existence of a factitive or the state of a patient.

Po  possessor  The one having possession of a patient (not necessarily the legal owner).

Po1  prior possessor  In the case of predicates specifying a transfer of possession, the one possessing the patient before the transfer is made.

Po2  subsequent possessor  In the case of predicates specifying a transfer of possession, the one possessing the patient after the transfer is made.

Pt  patient  The one whose state is described or affected (or tends to be affected) by the predication.

T  time  The orientation of the predication in time.

Tp  temporal direction  The measure of a patient's progress through time, characteristically (but not necessarily) expressed in temporal terms; or, in the case of a state predicate, the orientation of the patient in time.
General syntactic terms

CLF      classifier
FUT      future
IMPER    imperative
INTERROG interrogative
NEG      negative
NH       noun head
NP       noun phrase
NP_x     noun phrase with referent x
VP       verb phrase

Symbols

→ manifested by, realized as

( ) enclose the set of roles bound with the predicate, 
    plus any unbound role specifically under discussion

NOTES

1 This paper, being primarily taxonomic and pragmatic, and written 
by one not well-versed in generative grammar, may lack the rigor of a truly generative approach. The title is meant to identify 
this as an approach to syntax from a semantic starting point.

2 Black Tai is a member of the Tai (or Daic) language family. Black 
Tai speakers are concentrated in the upland valleys of northern 
Vietnam and Laos; clusters of resettled refugees are located else-
where in Laos and in South Vietnam. The author has been engaged 
in the study of Black Tai for a number of years, using as language 
teachers those who have resettled in South Vietnam from a number 
of localities in North Vietnam. I am indebted to these teachers, 
to the authors of various works, including those cited in this 
paper, and to Kenneth Gregerson, whose extensive help has greatly 
influenced my work, and who deserves credit for a number of the 
observations that have been made. Appreciation is also due to 
Christopher Court, who read and commented on an earlier draft, 
thus helping to pinpoint certain problems. Responsibility for 
the opinions published herein, however, remains my own.

Occasional reference was made to a computerized concordance 
of Black Tai text processed by the University of Oklahoma Office 
of Research Administration under National Science Foundation 
Grant GS-1605.
It is possible that certain Koine Greek middle-voice verbs, such as erchomai 'to come', mark by the middle voice the presence of both agent and patient roles in the subject noun, though this is far from certain.

Note that what is ambient in one language may not be in another, although the same phenomenon is referred to. For example, the Vietnamese sentence trvi mwe 'It's raining' translates literally 'The sky is raining'. Unless it can be shown that, to a Vietnamese speaker, 'sky' carries zero meaning in this context, we must assume that the sentence is not ambient in Vietnamese.

At this point I begin using the word predicate to indicate the semantic unit, and I reserve the words verb and verb phrase (VP) to indicate the surface unit ordinarily containing lexical items manifesting the predicate.

Some Mon-Khmer languages of Vietnam, such as Bahnar, mark this relationship overtly through the use of a causative prefix to differentiate the two verbs. Thus 'to kill' in Bahnar is, literally, 'to cause-die' (Banker 1964:105).

A key to the abbreviations used in this paper will be found at the end of the main text of the paper. In sentence-type formulas, roles bound with a predicate are enclosed in parentheses following the symbol for the predicate.

The symbol $\rightarrow$ is used to mean 'manifested by', or 'realized as', with a semantic unit on the left side of the arrow and a surface unit on the right.

It is not always true, however, that a bound role tends to be manifested in surface structure. In some cases, the semantic relationship between predicate and role is so close that the predicate infers the filler of the role. Note the following sentences:

(i) Susie bought a scarf.
(ii) Susie bought herself a scarf.
(iii) I saw the shark!
(iv) I saw the shark with my own eyes!

The possessor role $\rightarrow$ herself in (ii) and the instrument-like role $\rightarrow$ my own eyes in (iv) are bound with their respective predicates so closely that the semantic structures of the predicates infer the likely fillers of the respective roles. In (i) and (ii) the predicate $\rightarrow$ buy infers that the buyer becomes the possessor. In (iii) and (iv), see infers the use of one's own eyes as the means of sight. In such cases, then, it is redundant to manifest the expected filler of the noun role in surface structure, and we tend to leave such a referent unexpressed to avoid this redundancy, as
in (i) and (iii). The expected filler of the role may be expressed for emphasis, as in (ii) and (iv), or an unexpected filler may be substituted, as in (v) and (vi) below:

(v) Susie bought Tim a scarf.
(vi) I saw the shark with these binoculars!

In particular, the experiential subtype, which seems to be a special case of the possessional relating to possession within the mind, undoubtedly has as much place within the formational group of sentences as does the possessional subset. In English, we might think of the following as experiential subtypes of formational sentences:

\[
P_{st} \ (F, \ Ex)
\]

(vii) I have an idea.

\[
P_{pr} \ (F, \ Ex)
\]

(viii) I got an idea.

\[
P_{ca} \ (Ag, \ F, \ Ex)
\]

(ix) They gave me an idea.

Sometimes the redundancy is not attributable to the semantic structure of the predicate alone, but to an inference carried by the lexical nature of another item in conjunction with the predicate. Thus 'hit' alone does not infer the instrument used, but 'hit the nail' normally infers the use of a hammer.

Some linguists prefer to combine the roles I have labeled as direction and location. I see a number of reasons for distinguishing between them. In addition to those reasons given at this point in the paper, there is an additional consideration: the fact that the direction role need not be manifested in spatial terms. Thus in the two sentences:

(x) I went to the store.
(xi) I went fishing.

*fishing* manifests the direction role as fully as does *the store.*

Most of the sentences presented herein are taken, sometimes in amended form, from transcriptions of recorded language texts - two conversations and two legends. Some sentences were obtained from other sources, particularly from my present teacher, Mr. Lo Van Lo.

With certain exceptions, the orthography used is similar to that used in our article about Black Tai phonemes (Fippinger 1970). The following represent the changes from that orthography:
\[ n = /\text{ñ}/ \quad a: = /\text{aa}/ \]
\[ t\rho = /\text{c}/ \quad w = /\text{t}/ \]
\[ j = /\text{y}/ \quad w\rho = /\text{t\text{a}}/ \]
\[ i = /\text{-y}/ \text{ after vowels} \quad \gamma = /\text{a}/ \]
\[ u = /\text{-w}/ \text{ after vowels} \quad \gamma w = /\text{ow}/ \]

The numbers of sentence types in this section corresponds with the numbering used in the left margin of the matrix, for ease of cross-reference.

Certain particles are unglossed, but the lack of a gloss in such cases should not inhibit the reader from following the discussion in the paper. Black Tai words manifesting roles under study are marked with a single underline. Words manifesting the predicate with which these roles are related are marked by a double underline. In the free translation, if only a portion of the translation is under study, the portion involved is underlined.

Only bound roles are included in the Formula for each sentence type, except where a given unbound role is being specifically discussed, in which case the symbol for that unbound role is also included.

The parentheses enclosing \( h\gamma w^3 \) in the formula do not indicate that \( h\gamma w^3 \) is optional in any given sentence, but that the word appears in this position in some sentences of this type.

Some may prefer role titles more distinctive, such as source and goal; others may wish to differentiate more clearly between legal owner and the one in physical possession. For the purposes of this paper, I am not attempting any finer distinction than the one used.

For the purposes of this paper, I have not considered it necessary to divide the direction role into component roles, such as source, route, and destination.

REFERENCES


