Events

Adapted from the "TimeML Annotation Guidelines version 1.2.1" by Roser Saurí et al., 2006.

Contents

What is an Event?

Events are things that happen or occur. Events can be punctual, as in (1), or they can last for a period of time, as in (2). We will also, for the most part, consider states or circumstances in which something obtains or holds true, such as (3), to be events.

(1) A fresh flow of lava, gas and debris <u>erupted</u> there Saturday.

(2) 11,024 people, including local Aeta aborigines, <u>were evacuated</u> to 18 disaster relief centers.

(3) Israel has been scrambling to buy more masks abroad, after a <u>shortage</u> of several hundred thousand.

In these examples, and the examples that follow, an underline will indicate all the words that indicate the event. Annotating an event will not only involve identifying this underlined region, but other portions of the expression that fulfill certain roles, and categorizing certain features of the event (for example, the part of speech of the head word).

Note that, for purposes of clarity, not all "markable" events will be shown in the examples in this guide. Sentences often communicate more than one event; in this guide a sentence is usually introduced to illustrate a particular point, and so only the event relevant to that point will be marked in the sentence.

What to Annotate

To fully annotate an event, you may need to mark or classify up to eleven different features. Six of those features must be marked for every event; the rest may be marked or not, depending on how the event is expressed. The features include:

Features that all events have:

- **Full extent** – all the words that are used to express the event. For example, in (2), "were evacuated" comprises the full extent of the event.
- **Head word(s)** – an event expression usually has one, sometimes two or more, *head words* which express the core nature of the event. In (2), "evacuated" is the head word.
- **Part of Speech** – the part of speech of the head word; "evacuated" in (2) is a verb.
- **Class** – a tag which indicates the type of the event. There are eight possibilities, including "unknown." (2) is of the type *Occurrence*.
- **Polarity** – this is either true or false, and indicates whether the event is negated. The polarity of the underlined event in (2) is *true*.
- **Cardinality** – the number of occurrences that are expressed by the event. The event "were evacuated" (2) expresses a single event, the evacuation.

Features that only some events have:

- **Tense** – if the event is expressed with a verb, or as the predicate of a copular verb, then its tense (past, present, future) must be marked. In (2), "evacuated" is in the past tense.
- **Aspect** – if the event is a verb (or a copular predicate), then its aspect (perfect, progressive, etc.) must be marked. In (2), "evacuated" has the perfect aspect.
- **Polarity Signal** – if there is a particular word or set of words that signals the polarity of the event (e.g., the word "not" often signals an event that did not occur), then it must be marked.
- **Cardinality Signal** – if there is a particular word or set of words that expresses the number of events that occurred (e.g., "twice", "every", etc.), this must be marked.
- **Modality Signal** – if the event has a modal modifier ("would", "could", etc.), this must be marked.

Identifying the Full Extent of an Event

Events may be expressed by means of tensed (4) or untensed verbs (5), nominalizations (6), adjectives (7), predicative clauses (8), or prepositional phrases (9):

(4) John <u>taught</u> on Monday.

(5) Prime Minister Benjamin Netanyahu called the prime minister of the Netherlands <u>to thank</u> him for thousands of gas masks his country has already contributed.

(6) Israel will ask the United States to delay a military <u>strike</u> against Iraq until the Jewish state is fully prepared for a possible Iraqi <u>attack</u>.

(7) A Philippine volcano, <u>dormant</u> for six centuries, began exploding with searing gases, thick ash and deadly debris.

(8) "There is no reason why we <u>would not be prepared</u>," Mordechai told the Yediot Ahronot daily.

(9) All 75 people <u>on board</u> the Aeroflot Airbus died.

Once you have decided that an event has been expressed, you must decide what words are to be included in the event's "full extent". For verbs, you may notice that helping or auxiliary verbs such as "was" "were," or "have", and the infinite "to" are included in the event extent. For events expressed by a noun, generally only the single word expression, and not its modifiers, are marked: for example, in (6), "attack" is the event, not "Iraqi attack." A similar principle holds for verbs, in that verbal arguments (such as subjects and objects) are **not** marked as part of the event.. What unifies these two approaches (and the approach to the other parts of speech) is that we are attempting to find the minimum set of words that leaves the values of all eleven features unchanged. This lead us to **Rule #1 Mark the event full extent to be the minimum set of words that, when considered alone, retains the values of all eleven features.**

Note that sometimes an event expression may be sequentially discontinuous. In (10), the word "fully" is not necessary to maintain any of our features, so we can eliminate it. In (11), the word "it" is the object of the event, and so must not be included in the full extent

(10) There is no reason why we <u>would not be prepared</u>.
There is no reason why we <u>would not be</u> fully <u>prepared</u>.

(11) They will definitely <u>take into consideration</u> our readiness.
They will definitely <u>take</u> it <u>into consideration</u>.

What is NOT an Event

Not everything that looks like an event is actually an event. There are two important cases: generics and redundant expressions.

Generic event expressions will be not be tagged. A generic event is when a property is ascribed to a class of events, or a relation is asserted between a class of events and members of a set of entities, but *no single event instance, or set of event instances*, in this class is positioned in time, or in relation to other temporally located events. For example, the event expressions in the following sentences will not be tagged:

(12) <u>Use</u> of corporate jets for political <u>travel</u> is legal.
(13) Businesses <u>are emerging</u> on the Internet so quickly that no one, including government regulators, can <u>keep track</u> of them.
(14) Jews <u>are prohibited</u> from <u>killing</u> one another.

In between examples such as the preceding pure generics and others which express a single event, clearly positioned in time, and hence clearly taggable, such as:

(15) On June 7, Mr. Sununu used a jet provided by Fiber Materials Inc.

are less clear cut cases such as

(16) Mr. Sununu has resorted to regular use of corporate planes for political travel.

Sentences such as (16) express typical patterns of activity, but do not explicitly refer to specific events. These examples will also not be tagged. This lead us to **Rule #2: Do not mark references to generic events that do not explicitly refer to particular happenings or states, clearly positioned in time.**

The second case of event look-alikes are redundant expressions. For example, an event nominalization that provides no information beyond that supplied by the verb to which it is bound need not be tagged. For example, in (17), *said* is tagged as an event, and the word "reports" is not tagged. Thus **Rule #3: Do not mark redundant expressions as events.**

(17) Newspaper reports <u>have said</u> that Israel has a shortage of gas masks.

Identifying the Event Head Word(s)

Once you have identified the full extent of an expression, the next feature to determine is the *head word* of the event. The head word, in linguistics parlance, is the word (or words) in a phrase that serves the same grammatical or syntactic function as the phrase as a whole. In the examples below, the full event extent is underlined, while the event head words are marked in boldface. Strategies for specific parts of speech are outlined below.

If the event is expressed by a verbal phrase, as in (18) "has been scrambling" or (19) "were reported", the head word of the event is the non-auxiliary verb that carries the phrase. This is so even if the verb falls within the scope of a modal auxiliary, as in (20) "could", or a negative particle as in (21) "not." **Rule #4: The head of a verb phrase is the non-auxiliary, non-modal verb that expresses the core meaning of the phrase.**

(18) Israel <u>has been</u> **scrambling** to buy more masks abroad.

(19) No injuries <u>were</u> **reported**.

(20) The private sector <u>could</u> **establish** a private agency.

(21) Kaufman <u>did not</u> **disclose** details of the deal.

Sometimes an event expressed by a phrase (be it a noun phrase, verb phrase, prepositional phrase, or what-have-you) will not have a clear head (it is "exocentric"). In these cases, mark the whole phrase as the head of event. **Rule #5: For phrasally expressed events with no clear head, mark the whole phrase as the head.**

If the event is a predicative clause, only the predicative element (the adjective or the nominal in the following examples) will be tagged. Similar rules apply to the predicate as to the phrases identified above. If the predicate has a head, as in (22) or (23), then we will tag the head only. If the predicative element has no single head, as in (24), then we will mark the entire predicate as the head.

(22) If, in spite of everything, we <u>will not be</u> **ready**, we will ask the United States to delay.

(23) James Pustejovsky <u>was</u> **CTO** <u>of LingoMotors</u> for several years.

(24) All 75 people <u>were</u> **on board** at 9:00 a.m.

Event Classes

You have now identified the extent of the event, it's head word(s), and, and in so doing, its part of speech. The next step is to assign an event class. There are eight possible classes, and they can be roughly organized into the following hierarchy.

- I. Occurrence (1)
  - a. Reporting (2)
  - b. Perception (3)
  - c. Aspectual (4)
  - d. Intensional Action (5)
- II. State (6)
  - a. Intensional State (7)
- III. Unknown (8)

First decide if an event is an Occurrence, a State, or Unknown. If the event is one of the two former, decide if the event additionally falls into the one of the subcategories. Explanations of all the classes follow.

Occurrence

This class is a catch-all for events that happens or occurs in the world. Some examples are given as illustration:

(25) The Defense Ministry said 16 planes <u>have</u> **landed** so far with protective equipment against biological and chemical warfare.

(26) Mordechai said all the gas masks from abroad <u>would</u> **arrive** soon and be distributed to the public, adding that additional distribution centers would be set up next week.

(27) Two moderate eruptions shortly before 3 p.m. Sunday appeared <u>to</u> **signal** a larger explosion.

Some examples from financial journals:

(28)   Ralston said its restructuring costs include the **phase-out** of a battery facility in Greenville.

(29)   Its cereal division **realized** higher operating **profit** on volume **increases**, but also spent more on **promotion**.

Reporting

Reporting events are an occurrence where a person or an organization declares something, narrates an event, informs about an event, etc. Some examples of verbs that fall into this class are "say", "report", "tell", "explain", "state", and "cite."

(30)   Punongbayan **said** that the 4,795-foot-high volcano was spewing gases up to 1,800 degrees.

(31)   No injuries were **reported** over the weekend.

(32)   **Citing** an example, ...

Perception

Perception events are any occurrence that involves the physical perception of another event. Perception events are typically expressed by verbs like "see", "watch", "glimpse", "behold", "view", "hear", "listen", or "overhear".

(33)   Witnesses tell Birmingham police they **saw** a man running.

(34)   "You can **hear** the thousands of small explosions down there", a witness said.

Aspectual

In languages such as English and French there is a grammatical device of aspectual predication, which focuses on different facets of event history.

- **Initiation**: begin, start, commence, set out, set about, lead off, originate, initiate.
- **Reinitiation**: restart, reinitiate, reignite (metaphorically)
- **Termination**: stop, cancel, end, halt, terminate, cease, discontinue, interrupt, quit, give up, abandon, block, break off, lay off, call off, wind up.
- **Culmination**: finish, complete.
- **Continuation**: continue, keep, go on, proceed, go along, carry on, uphold, bear on, persist, persevere.

Thus an aspectual event is an occurrence that concerns the beginning, ending, or other period of time as part of an event. A couple of examples:

(35)   The volcano **began** showing signs of activity in April for the first time in 600 years.

(36)   All non-essential personnel should **begin** evacuating the base.

Intensional Action

An Intensional Action (I-Action) is a type of occurrence that introduces an event argument (which must be in the text explicitly) describing an action or situation from which we can infer something given its relation with the I-Action. For instance, the events introduced as arguments of the actions in (a) have not necessarily occurred when the I-Action takes place. Explicit performative predicates (like those in (e)-(g), below) are also included here. Note that the I-Action class does not cover states (see the description of Intensional States below). The following list, where I-Actions are in surrounded by square brackets, and the events they introduce are also underlined, is representative (not exhaustive) of the types of events included in this class:

(a) attempt, try, scramble:

    (37) Companies such as Microsoft or a combined Worldcom MCI [are **trying**] to **monopolize** Internet access.

    (38) Israel has been [**scrambling**] to **buy** more masks abroad.

(b) investigate, investigation, look at, delve:

    (39) The Organization of African Unity [will **investigate**] the Hutu-organized **genocide** of more than 500,000 minority Tutsis.

    (40) A new Essex County task force began [**delving**] Thursday into the **slayings** of 14 black women.

(c) delay, postpone, defer, hinder, set back:

    (41) Israel will ask the United States [to **delay**] a military strike against Iraq.

(d) avoid, prevent, cancel:

    (42) Palestinian police [**prevented**] a planned pro-Iraq **rally** by the Palestinian Professionals' Union.

(e) ask, order, persuade, request, beg, command, urge, authorize:

    (43) Iraqi military authorities [**ordered**] all Americans and Britons in Kuwait to **assemble** at a hotel.

    (44) They [were **asked**] to **take** along important papers.

(f) promise, offer, assure, propose, agree, decide:

    (45) Germany [has **agreed**] to lend Israel 180,000 protective kits against chemical and biological weapons.

    (46) Switzerland [**offered**] to **lend** Israel another 25,000 masks.

(g) swear, vow, name, nominate, appoint, declare, proclaim, claim, allege, suggest.

State

States describe circumstances in which something obtains or holds true. Because everything is always in one "state" or another, we will not annotate all possible states, only those that satisfy the following rules:

Rule #6: Mark states that are identifiably changed over the course of the document. For instance, in the first example below, in the expression *the Aeroflot Airbus* the relationship indicating that the Airbus is run and operated by Aeroflot is not a STATE in the desired sense. Rather, because it is persistent throughout the event line of the document, we factor it out and it is not marked up. On the other hand, properties that are known to change during the events represented/reported in an article will be marked as STATEs.

    (47) All 75 people **on board** the Aeroflot Airbus died.

    (48) Israel has been scrambling to buy more masks abroad, after a **shortage** of several hundred thousand.

    (49) No **injuries** were reported over the weekend.

Rule #7: Mark states that are directly related to a temporal expression. This criterion includes all states that are linked to a TIMEX3 mark-able by means of a TLINK. In the following examples the related temporal expression is set off in square brackets.

 (50) James Pustejovsky was <u>**CTO**</u> of Lingo Motors for [several years].
 (51) They <u>**lived**</u> in U.N.-run refugee camps for [2 1/2 years].

Rule #8: Mark states that are introduced by an Intensional Action, Intensional State, Reporting, or Perception event. In the following examples, the introducing event is set off in square brackets.

 (52) He [<u>**mediated**</u>] the <u>**crisis**</u>.
 (53) Saddam Hussein [<u>**sought**</u>] <u>**peace**</u> on another front.
 (54) Har-Shefi [<u>**told**</u>] police that Rabin [<u>was a **traitor**</u>].
 (55) He [<u>**saw**</u>] the that the girl was <u>**sleeping**</u>.

Rule #9: Mark predicative states the validity of which is dependent on the document creation time. The states introduced by are in the following examples will be tagged given that their validity is relative to the point in time they have been asserted (the document creation time). This will also include some quantitative statements such as those that appear in financial journals, as in (58). This rule, will however apply only to predicative states. States that expression membership in a class ("sortal" states, like President, CTO, etc.) won't be marked up. Note that the current class, State, will not contain states that have been tagged as I-States.

 (56) A total of about 3,000 Americans and 3,000 Britons **are** in Iraq and Kuwait.
 (57) Overall, more than 2 million foreigners **are** in both countries.
 (58) Gas prices **fell** from a twenty-two dollar barrel level down to the fourteen dollars we're seeing today.

Intensional State

An Intensional State (I-State) class is similar to the I-Action class. This class includes states that refer to alternative or possible worlds, (delimited by square brackets in the examples below), which can be introduced by subordinated clauses (61), untensed verb phrases (71), or nominalizations (73). All I-States will be annotated, whether they are persistent or not throughout the text being marked-up. As above, the following list of I-States is just representative, not exhaustive:

(a) believe, think, suspect, imagine, doubt, feel, be conceivable, be sure:

 (59) "We <u>**believe**</u> that [his words cannot distract the world from the facts of Iraqi aggression]."
 (60) Analysts also <u>**suspect**</u> [suppliers have fallen victim to their own success].
 (61) Russia now <u>**feels**</u> [the US must hold off at least until UN secretary general visits Baghdad].
 (62) It <u>is **conceivable**</u> that [a larger eruption will take place in few hours].
 (63) He said he <u>was **sure**</u> that [a larger eruption would happen].

(b) want, love, like, desire, crave, lust:

 (64) "They <u>don't **want**</u> [to play with us]," one U.S. crew chief said.
 (65) We aim at triggering associations that will generate <u>**lust**</u> for [change].
 (66) An occupation Israel <u>would **love**</u> [to end], but ...

Note that *love* as in *John loves Paul's cousin* is not considered an I-State. Similarly for like. An I-State must govern another event.

(c) hope, expect, aspire, plan:

> (67)   "We're **expecting** [a major eruption]," he said in a telephone interview early today.
> (68)   Once it is extinguished, they **hope** that [residents will begin returning to their homes].
> (69)   We **aim** at [triggering associations that will generate lust for change].

(d) fear, hate, dread, worry, be afraid:

> (70)   The agencies **fear** [they will be unable to crack those codes to eavesdrop on spies].
> (71)   They were **afraid** [to stay].

(e) need, require, demand

(f) be ready, be eager, be prepared

> (72)   The industry's rapid growth also is attracting regulators **eager** [to police its many facets].
> (73)   "There is no reason why we would not be **prepared** for [an attack]".

(g) be able, be unable

> (74)   The agencies fear they will be **unable** [to crack those codes to eavesdrop on spies].

Polarity & its Signal

The polarity is simply whether or not an event was indicated to have "not" occurred. If an event did not occur, it has negative (false) polarity. All events will have either positive or negative polarity. Also, if a specific word or words (is used to indicate the polarity of an event e.g., the word "not" to indicate negative polarity), these words should be marked as the polarity "signal". Not all events will have an explicit polarity signal.

Cardinality & its Signal

The cardinality of an event is how many events are indicated by the event expression. The next example indicates two teaching events occurred, and they are indicated with a single expression. In this example, there is also an explicit cardinality signal, the word "twice."

> (75)   John **taught** twice on Tuesday.

All events have cardinality, and it is almost always 1. Not all events, however, will have an explicit cardinality signal. Also, sometimes, an event's cardinality is indeterminate or unknown. This is usually in cases with cardinality signals such as "every" "each" or "all." In these cases mark the cardinality as "zero" to indicate and unknown cardinality.

You should always create only a single event instance for events with a cardinality of more than 1, unless one of those events is referred to individually, apart from the other events. **Rule #10: For multiple events expressed with a single form, only create separate event instances (as opposed to marking cardinality) if an individual event, or some subset of events, is referred to apart from the whole set.**

Modality Signal

Many verbs are preceeded by modal auxiliars such as "must", "may", "might", "can", "could", "should", "would", and "have". These words should be marked as the modality signal.

Difficult Cases

Implicit Reporting Events

While often a quotation is introduced by an explicit reporting event, such as "said" in (76) or "yelled in (77), there are times when they are not, such as in (78). In these cases, mark an "implicit reporting" event by marking the starting and ending quotation marks, and selecting "Other" as the part of speech.

(76) "They don't want to play with us," one U.S. crew chief <u>said</u>.

(77) "What have you done?" <u>yelled</u> the peasant.

(78) "But father, you told me to guard it." "But you didn't guard it." "But I did!"

Aspectual Verbal Cluster

Sometimes an event is expressed by a verbal cluster consisting of an aspectual verb, such as "begin" or "stop", and a main verb. In these cases, both verbs will be tagged as independent events, as in (77). If the aspectual verb is preceded by auxiliary forms (as in the last two examples below), the auxiliary forms will be attached to the aspectual verb, as in (78) and (79).

(79) The private sector <u>began</u> <u>establishing</u> a private agency.

(80) If US <u>had **stopped**</u> <u>interfering</u> in other countries policies long ago, ...

(81) They probably <u>would have **began**</u> <u>responding</u> to President Reagan's 600 ships plan with new construction.

Light Predicates

If the event is a nominalization accompanied by some sort of light predicate (as shown by the underlined segments below), we will tag both elements. Both elements are tagged because both verbal and nominal heads are relevant to different kinds of event information.

(82) Several pro-Iraq <u>demonstrations have taken place </u>in the last week.

(83) They will definitely <u>take into consideration </u>our readiness.

Causative Predicates

Causative predicates raise issues as to whether the event signaled by the causative is genuinely distinct from the event which may be the causative's logical subject. For example, in (81), is the cause event distinct from the rains event, and should they be tagged as such?

(84) The rains caused the flooding.

In all cases, the predicate denoting the causation (e.g., caused, stem from, lead to, breed, engender, hatch, induce, occasion, produce, bring about, produce, secure, etc.) should be marked as an event. Also, in all cases, the object event should be marked as an event. Two cases for the logical subject can be distinguished.

Case 1: EVENT cause EVENT. If the (logical) subject is an event-denoting expression (e.g., war flood, rain, meeting, etc.), mark that as an event as well.

(85)   The **rains** caused the <u>flooding</u>.

Case 2: ENTITY cause EVENT. If the (logical) subject is an individual entity (John, the woman, the company, etc.), then do **not** mark it as an event.

(86)   John <u>caused</u> the <u>fire</u>.

Distinguishing Adjectives from Participles

It can be difficult to distinguish adjectives from non-finite past and present participles, passives, or progressives. The following tests can be used.

Rule #11: When trying to distinguish between an adjective and a participle, if an -ed form can be preceded by a degree adverb it is likely an adjective.

(87)   He was [very] **surprised**. (=> adjective)
(88)   He was [more] **surprised** than she was. (=> adjective)

Rule #12: When trying to distinguish between an adjective and a participle, if the -ed form is prefixed by un-, it is not a verb if the verb form cannot be so prefixed.

(89)   He remains **unconcerned** about the risk. (=> adjective)
(90)   The door <u>was</u> **unlocked** by the guard. (=> part participle)

Rule #13: When trying to distinguish between an adjective and a participle, if the event is in the predicative position of one of the following verbs, and the verb could be replaced by one of the others, it is likely an adjective: be, become, feel, look, remain, seem, sound.

Distinguishing Nouns from Present Participles

It can be difficult to distinguish adjectives from non-finite present participles or progressivess. You can use the tests for distinguishing adjectives from present participles, as well as the following:

Rule #14: When trying to distinguish between a noun and present participle, if the form could be plural, it is likely a noun.

(91)   Thousands marched to protest the <u>killing / killings</u>. (=> noun)

Rule #15: When trying to distinguish between a noun and present participle, if the form could be modified by an adjective, it is likely a noun.

(92)   [Careful] **driving** prevented the accident. (=> noun)

Rule #16: When trying to distinguish between a noun and present participle, if the form has a direct object expressed as an "of" phrase, it is likely a noun.

(93)   Bob's repeated **slamming** [of the door] annoyed her. (=> noun)

Rule #17: When trying to distinguish between a noun and present participle, if the form is preceded by a noun, it is likely a noun.

(94)   The [plant] **closing** worried the whole town. (=> noun)

Rule #18: When trying to distinguish between a noun and present participle, if the form can be modified by an adverb, it is likely a present participle.

a. Bob prevented the accident by **<u>driving</u>** [carefully]. (=> present participle)

Rule #19: When trying to distinguish between a noun and present participle, if the form has a simple noun phrase as its direct object, it is likely a present participle.

(95)   Bob's repeatedly **<u>slamming</u>** [the door] annoyed her. (=> present participle)

Tense & Aspect

Not all events have tense and aspect; tense and aspect should be assigned only to events expressed with a verb, or to events involving a copular or predicative expression. To determine the tense and aspect of an event, **first** determine if event is expressed as a verb, then use the following chart:

VERB	NON-VERB
Does the event have a modal?	Is the event is expressed as a copular predicate?

1) NO MODAL – is the verb finite or non-finite?
    i)   FINITE – use Table 1
    ii) NON-FINITE – use Table 2
	3) COPULAR PREDICATE – use Table 5

2) MODAL – is the modal "have to"?
    i)   MODAL "have to" – Use Table 3
    ii) OTHER MODAL – Use Table 4
	4) NOT COPULAR PREDICATE
	    Tense=NONE, Aspect=NONE

Finite Verbs

Active	Passive	Tense	Aspect
teaches	is taught	present	none
is teaching	is being taught	present	progressive
has taught	has been taught	present	perfect
has been teaching	has been being taught	present	both
taught	was taught	past	none
was teaching	was being taught	past	progressive
had taught	had been taught	past	perfect
had been teaching	had been being taught	past	both
will teach	will be taught	future	none
is going to teach	is going to be taught	future	none
will be teaching	will be being taught	future	progressive
is going to be teaching	is going to be being taught	future	progressive
will have taught	will have been taught	future	perfect
will have been teaching	will have been being taught	future	both

Table 1: Tense and aspect for finite verbs. Shaded forms are rarely acceptable.

Non-Finite Verbs

A finite verb is a verb that cannot by itself be the main verb of a sentence. A range of subordinate clauses in English contain non-finite verbs. These include infinitives (93), present participles (94), and past participles (95).

(96)   Callahan plans <u>to **release**</u> the information today.
(97)   King Hussein arrived in Washington yesterday **<u>seeking</u>** to gain support for a new initiative
(98)   Steel plates **<u>found</u>** at the scene are being examined by experts.

Form	Tense	Aspect
(to) release	infinitive	none
(to) be releasing	infinitive	progressive
(to) have released	infinitive	perfect
(to) have been releasing	infinitive	both
seeking	present participle	none
having released (?)	present participle	perfect
found	past participle	none

Table 2: Tense and aspect for non-finite verbs

Verbs Preceeded by a Modal Auxiliar

The following table gives the mapping from verb forms preceded by the modal "have to" to tense and aspect.

Form	Tense	Aspect
has to teach	present	none
has to be teaching	present	progressive
has to have taught	present	perfect
has to have been teaching	present	both
had to teach	past	none
had to be teaching	past	progressive
will have to teach	future	none
will have to be teaching	future	progressive

Table 3: Tense and aspect for verbs proceeded by the modal "have to"

The following table gives the mapping from verb forms preceded by all other modals to tense and aspect.

Form	Tense	Aspect
could teach	none	none
could be teaching	none	progressive
could have taught	none	perfect
could have been teaching	none	both

Table 4: Tense and aspect for verbs proceeded by modals other than "have to"

Predicative or Copular Expressions

An example of a copular expression is:

(99)   We <u>will be</u> **ready** in the event of an attack.

A copular expression one in which a linking verb V is used to say something ("Y") about something else ("X"). For example, in the copular expression "John is tall", X=John, Y=tall, and the linking

verb is "is". Rule #20: **Only mark the tense and aspect of verbally expressed events, or events expressed as a copular predicate.**

Form	Tense	Aspect
The suspect is X.	present	none
The suspect is being X.	present	progressive
The suspect has been X.	present	perfect
The suspect was X.	past	none
The suspect was being X.	past	progressive
The suspect had been X.	past	perfect
The suspect will be X.	future	none
The suspect will have been X.	future	perfect

Table 5: Tense and Aspect assignments for nominal, adjectival, and prepositional events found as copular predicates. Examples of X are "a nuisance" (nominal), "unwilling" (adjectival), and "in trouble" (prepositional).

Glossary

Causative

Copular

Finite Verb

Helping Verb

Linking Verb

Logical Argument

Logical Subject

Logical Object

Nominal

Nominalization

Non-Finite Verb

Predicate

Summary

- **Full extent** – all the words that are used to express the event
- **Head word(s)** – the word(s) that express the core nature of the event.
- **Part of Speech** – the part of speech of the head word
    a. Adjective, Noun, Verb, Preposition, Other
- **Class** – a tag which indicates the type of the event.
    a. Occurrence, Reporting, Perception, Aspect, I-Action, State, I-State, Unknown
- **Tense** – the tense of a verbal or copular predicative expression of an event
    a. Past, Present, Future, Infinitive, Present Participle, Past Participle, None
- **Aspect** – the aspect of a verbal or copular predicative expression of an event
    a. None, Progressive, Perfect, Both
- **Polarity & Signal** – whether the event occurred, and the words expressing that polarity
    a. true, false
- **Cardinality & Signal** – the number of events, and the words expressing that number
    a. a number ≥ 1 – the concrete number of events expressed
    b. zero – an indeterminate number of events are expressed
- **Modality Signal** – the modal modifier(s) to an event
    a. have, must, may, might, can, could, should, would

Rules

1	Mark the event full extent to be the minimum set of words that, when considered alone, retains the values of all eleven features
2	Do not mark references to generic events that do not explicitly refer to particular happenings or states, clearly positioned in time.
3	Do not mark redundant expressions as events
4	The head of a verb phrase is the non-auxiliary, non-modal verb that expresses the core meaning of the phrase
5	For phrasally expressed events with no clear head, mark the whole phrase as the head.
6	Mark states that are identifiably changed over the course of the document
7	Mark states that are directly related to a temporal expression
8	Mark states that are introduced by an Intensional Action, Intensional State, Reporting, or Perception event
9	Mark predicative states the validity of which is dependent on the document creation time
10	For multiple events expressed with a single form, only create separate event instances (as opposed to marking cardinality) if an individual event, or some subset of events, is referred to apart from the whole set.
11	When trying to distinguish between an adjective and a participle, if an -ed form can be preceded by a degree adverb it is likely an adjective.
12	When trying to distinguish between an adjective and a participle, if the -ed form is prefixed by un-, it is not a verb if the verb form cannot be so prefixed.
13	When trying to distinguish between an adjective and a participle, if the event is in the predicative position of one of the following verbs, and the verb could be replaced by one of the others, it is likely an adjective: be, become, feel, look, remain, seem, sound.
14	When trying to distinguish between a noun and a present participle, if the form could be plural, it is likely a noun.
15	When trying to distinguish between a noun and present participle, if the form could be modified by an adjective, it is likely a noun.
16	When trying to distinguish between a noun and present participle, if the form has a direct object expressed as an "of" phrase, it is likely a noun.
17	When trying to distinguish between a noun and present participle, if the form is preceded by a noun, it is likely a noun.
18	When trying to distinguish between a noun and present participle, if the form can be modified by an adverb, it is likely a present participle.
19	When trying to distinguish between a noun and present participle, if the form has a simple noun phrase as its direct object, it is likely a present participle.
20	Only mark the tense and aspect of verbally expressed events, or events expressed as a copular predicate.