Annotating Events in English
TimeML Annotation Guidelines

Version TempEval-2010

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This document describes the annotation guidelines employed for annotating event instances in the English dataset of the TempEval 2010 evaluation, one of the tasks in the SemEval International Workshop on Semantic Evaluations.\footnote{\url{http://nlp.cs.swarthmore.edu/semeval/tasks/index.php}}

The annotation will be according to the TimeML language (Pustejovsky et al., 2005), a specification language for events and temporal expressions. TimeML was first developed in 2002 in an extended workshop called TERQAS (Time and Event Recognition for Question Answering Systems),\footnote{\url{http://www.timeml.org/site/terqas/index.html}} which focused on the issue of answering temporally based questions regarding events and entities in news articles. In 2003, TimeML was further developed in the context of the TANGO workshop (TimeML Annotation Graphical Organizer).\footnote{\url{http://www.timeml.org/site/tango/index.html}} In addition, TimeML has been consolidated as an international cross-language ISO standard (ISO WD 24617-1:2007), and was approved as the annotation language for TempEval (Verhagen et al., 2007, 2009).

The annotation process will be split into two sequential subtasks. First, identifying what are the events in text, and then characterizing them with their appropriate attributes (e.g., tense, aspect, or polarity). The structure of the present document reflects this division. Section 2 gives an overview of the notion of event as understood in TimeML. Then, section
3 and 4 address the issue of **event identification**, laying out first what to annotate as events and then describing how much text to mark up as such –i.e., its extent. Finally, section 5 focuses on the task of **attribute annotation**.

## 2 Events in TimeML

We use *event* as a cover term for situations that *happen*, *occur*, *hold*, or *take place*. Events can be punctual (1-2) or last for a period of time (3-4). We also consider as events those predicates describing *states* or *circumstances* in which something obtains or holds true (5).

(1) Ferdinand Magellan, a Portuguese explorer, first **reached** the islands in search of spices.

(2) A fresh flow of lava, gas and debris **erupted** there Saturday.

(3) 11,024 people, including local Aeta aborigines, **were evacuated** to 18 disaster relief centers.

(4) “We’re **expecting** a major eruption,” he said in a telephone interview early today.

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

Events may be expressed by means of tensed or untensed verbs (6-7), nominalizations (8), adjectives (9), predicative clauses (10), or prepositional phrases (11):

(6) A fresh flow of lava, gas and debris **erupted** there Saturday.

(7) Prime Minister Benjamin Netanyahu called the prime minister of the Netherlands to **thank** him for thousands of gas masks his country has already contributed.

(8) Israel will ask the United States to delay a military **strike** against Iraq until the Jewish state is fully prepared for a possible Iraqi **attack**.

(9) A Philippine volcano, **dormant** for six centuries, began exploding with searing gases, thick ash and deadly debris.

(10) "There is no reason why we would not **be prepared,**” Mordechai told the Yedioh Ahronot daily.

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

In the interest of highlighting the point being made, in the sentences above there are “markables” (i.e. elements to be marked up in actual annotation) which here are not shown as tagged. In (7), for instance, neither **called** nor **contributed** are annotated. In practice, however, the annotator will mark up all markables during actual annotation. This will be true of many additional examples given as this document proceeds.
3 What to annotate as events

The current section details what expressions will be considered as denoting events. Each subsection focuses on a different part of speech: verbs, nouns, adjectives, prepositional phrases, and other constructions. For your convenience, these guidelines are summarized in Tables 1 and 2 (in the appendices).

3.1 Events denoted by verbs

We consider that all verbal predicates express an event and hence will be marked up as such, including those which denote states. In the sentences below, the verbal event expressions are indicated in bold face and between square brackets.

    b. Amir, 27, [is serving] a life sentence for the November 1995 assassination of Rabin at a Tel Aviv peace rally.
    c. President Clinton [says] he and Blair [will stand] together not just on Iraq but also on arresting the terrorists.
    d. We [are going] [to maintain] our forces in the region for the foreseeable future.
    e. “Some of these bands of kidnappers [are made up] of foreigners,” Toledo [said].
    f. Only Saudi Arabia [has] more oil reserves.
    g. With Kuwait now [annexed], Iraq [has control] of 20 percent of the world’s oil reserves.
    h. Israel [has been scrambling] [to buy] more masks abroad, after a shortage of several hundred thousand gas masks.

3.2 Events denoted by nouns

Nouns which express an event accept to appear in at least two of the following contexts:

- NOUN lasted for several seconds/minutes/days/years/...
- NOUN was very fast/immediate/...
- NOUN took/takes/will take place in TEMPORAL EXPRESSION
- NOUN began/continued/ended in TEMPORAL EXPRESSION

Event-denoting nouns will be marked up according to the following guidelines:

1. Prenominal modifiers. Event-denoting nouns acting as prenominal modifiers, like those in bold face below, will NEVER be annotated as events.

(13) a. Many of the same reactions occur in a [panic attack].
    b. The likely shape of the [leadership contest] emerged yesterday as Labour began an inquest on its [election defeat].
Other common cases involve the use of present participle forms. They will have the same policy applied.

(14) a. the waiting room
    b. knitting needle
    c. shooting match
    d. drinking problem

2. Sortal states. Sortal states are generally expressed by:

- Agentive nominals; that is, nouns referring to the agents of certain activities or actions. In most cases they correspond to deverbal nouns (e.g., employer, winner, customer), but not always (e.g., passenger, pedestrian).
- Nouns denoting professions, roles, or positions (e.g., doctor, plumber, CTO, scholar).
- Rigid designators; that is, terms referring to the same entity in all possible worlds; e.g., the 3rd president of America.

These elements will be annotated as events ONLY when functioning as the head of a predicative complement. A predicative complement expresses a predication and is the complement of a verb belonging to one of the classes listed below, among others. In the examples that follow, the predicative complement is in square brackets and the sortal state in bold face.

- Copulative predicates (e.g., to be, seem, etc.) –underlined below.
  (15) Currently she is [President of the Macedonian Teachers Association in Victoria. ]
- Inchoative predicates (e.g., become). They express the coming to existence of a situation.
  (16) In 1821 Simón Bolívar became [the first president of the Republic of Bolivia].
- Aspectual predicates (e.g., begin, continue, end, finish, etc.).
  (17) He continued as [director of research at the Bell Telephone. Laboratories established in 1925].
- Change of state predicates, that is, any predicate expressing the coming to be or ending of the position expressed by the sortal state, such as retire, appoint, elect, resign, etc.
  (18) In 1998 she retired as [a professor emeritus of mathematics].
- Predicates of evaluation and description (e.g., consider, describe, depict, evaluate, etc.).
  (19) Daimler is considered [the first inventor to have invented a practical internal-combustion engine].
3. All other event-denoting nouns will be marked up as events ALWAYS. For example:

(20) a. An embargo on Iraq could plunge the U.S. into a depression and the rest of the world into an economic crisis.
    b. The economic chokehold appears to be working.
    c. Through the Pope, Cuba can begin a more productive relationship with the world.
    d. The men explained that that was an attack by masked individuals.
    e. Here again, it was the democratic government that quickly became a threat to the United States.
    f. Moscow depicted the situation as a conflict between “the forces of democracy and progress against those of reaction”.

We strongly recommend annotators to use table 1 and 2 (in the appendices) for a general overview of these conditions during the annotation process.

3.3 Events denoted by ADJECTIVES

Adjectives generally express a property or attribute of an entity, and as such, they denote an event of a stative nature. Adjectives can appear in attributive or predicative position. 

Attributive adjectives function as premodifiers of the noun:

(21) a. furious reaction
    b. unbearable pain
    c. fair trial
    d. beautiful garden

On the other hand, predicative adjectives act as the predicative complement of a verb belonging to one of the types listed below, among others. In the examples, the main verb is underlined and the predicative adjective is in bold face.

• Copulative predicates (e.g., be, seem, etc.).

(22) The students seemed exhausted after three weeks of classes.

• Inchoative predicates (e.g., become, turn into). They express the coming to existence of a situation.

(23) The Chinese dissident said he left China because his life became unbearable there.

• Aspectual predicates (e.g., begin, continue, finish, terminate, etc.).

(24) Families kept hopeful and many did see the return of their loved ones.

• Causative predicates (e.g., cause, make, etc.).
(25) Dan Hollander, skater and entertainer, really made the audience happy.

- Change of state predicates in general.
- Predicates of perception (e.g., look, hear, etc.).

(26) Ellen DeGeneres and Portia de Rossi looked ecstatic as they married in an intimate ceremony on Saturday.

- Predicates of evaluation and description (e.g., consider, describe, present, etc.).

(27) He is often characterized as eccentric.

When annotating adjectives, the following guidelines apply:

1. **Attributive adjectives.** NO adjective in attributive position will be marked up as event.

2. **Predicative adjectives.** We will only annotate as events those predicative adjectives that express a non-persistent property of the entity denoted by the noun.

   There are indeed many properties of entities that can be considered as non-persistent. People, for instance, can change their nationality and cars can be painted into a color different that their original one. According to these considerations, the adjectives Senegalese in (28), and red in (29) should be marked up as events.

(28) Most of the people aboard were Senegalese, including many schoolchildren.

(29) The defendants car was red.

However, we will ONLY annotate those adjectives satisfying at least one of the following conditions:

a. The property they denote is clearly fluid, non-persistent, such as red in (30) but not in (31).

   (30) Nycks face turned red with shame and anger.

   (31) The defendants car was red.

b. The property is presented as temporally bound to a particular point or period of time.

   (32) France was under-developed in the eighteenth century, and Germany at the beginning of the nineteenth.

c. The property is presented as the opinion, knowledge, or belief of somebody, or as a matter under discussion; e.g., Senegalese in (33) but not in (34).
(33) The government claims that some abductees are themselves Senegalese.

(34) Most of the people aboard were Senegalese, including many schoolchildren.

Some cases may be hard to evaluate. As a general rule, in case of doubt do NOT annotate the adjective.

We recommend annotators to use tables 1 and 2 (in the appendices) for a general overview of the guidelines for adjectives during the annotation process.

3.4 Events denoted by PPs

PPs denoting events will be annotated ONLY when functioning as predicative complements. This involves PPs that are complement of verbs belonging to the types listed below, among others.

• Copulative predicates (e.g., be, seem, etc.).

(35) No woman has been in charge of a mission until now.

• Inchoative predicates (e.g., become). They express the coming to existence of a situation.

(36) As a boy, he was an excellent horseman and also became on good terms with a tribe of Sioux Indians.

• Aspectual predicates (e.g., begin, continue, finish, end, etc.).

(37) The US economic and political embargo has kept Cuba in a box.

• Causative predicates (e.g., cause, force, put).

(38) She says this puts the very existence of women at the hands of their husbands.

• Etc.

3.5 Events denoted by other elements

Events can also be referred to by other elements, most typically locative adverbs such as here and there (39). They will be marked up only when functioning as a predicative complement.

(39) a. We’re there to stay for a fairly lengthy period.

b. We are here because what happens on this island will also have an impact on the United States.
4 Event extents

This section addresses what to mark as the span, or extent, of the event tag.

4.1 Events expressed by sentences, clauses, or VPs

The general rule for events expressed by sentences (40a), clauses (40b), or VPs (40c) is to annotate only the verbal head of the construction. In the examples below, the event construction is delimited by square brackets, whereas the extent to mark up is indicated in bold face. Note that the examples may present other event expressions, but this section focuses just on those verbal events delimited by the brackets.

(40) a. [He sold the property to five buyers].
   
   b. Bush held out the prospect of more aid to Jordan [if it cooperates with the trade embargo].
   
   c. And Wong Kwan will be lucky [to break even].

There is a number of verbal constructions expressing events. In some of them, the general rule above applies straightforwardly, others need additional guidance. They are covered in what follows.

Simple VPs. The event tag covers the verbal head, as stipulated by the general rule.

(41) a. A fresh flow of lava, gas and debris erupted there Saturday.
   
   b. Bush held out the prospect of more aid to Jordan if it cooperates with the trade embargo.
   
   c. And Wong Kwan will be lucky to break even.

Complex VPs. That is, VPs where the verbal head is accompanied by auxiliaries and related particles. The tag extends only over the verbal head. In the following examples, the span of the verbal construction is underlined, whereas the extent of the event tag is marked in bold face.

(42) a. Amir may have been trying to impress Har-Shefi.
   
   b. Israel has been scrambling to buy more masks abroad.
   
   c. No injuries were reported.
   
   d. The private sector could establish a private agency.
   
   e. Kaufman did not disclose details of the deal.

Phrasal verbs. Phrasal verbs are also known as verb-particle constructions. Only the verbal part (and not its particle) is marked up:

(43) Additional distribution centers would be set up next week.
**Idioms.** Only the main verbal predicate will be tagged as event, as indicated below in bold face.

(44) Even more hard drives **kick** the bucket.

### 4.2 Events expressed by NPs

As in the case above, the general rule here is to *mark up only the noun head of the NP*. The following cases can be distinguished.

**Regular NPs.** The event tag extends only over the head noun, disregarding any determiners, specifiers, complements, or modifiers. In the following examples, the NP is indicated by square brackets, whereas the event-markable expression is in bold face.

(45) a. [The financial **assistance** from the World Bank and the International Monetary Fund] are not helping.

b. [The Pope’s **visit**] will persuade a great many more Cubans to break loose of the Cuban government.

**Named events.** They are events referred to by proper nouns, such as *the Vietnam War, Prohibition, the Industrial Revolution*. We will mark-up only the head noun (i.e., War, Prohibition, and Revolution in the previous examples).

**Sortal states.** As seen earlier, sortal states are generally expressed by (a) agentive nominals (e.g., employer, passenger, winner, customer); (b) nouns denoting professions, roles, or positions (e.g., doctor, plumber; CTO, scholar); and (c) rigid designators (e.g., *the 3rd president of America*). As in the previous cases, we will annotate only the head noun of the construction (in bold face below).


b. Mr. Hay continued as the **CTO** of OPTIM.

c. In 1998 she retired as a **professor emeritus** of mathematics.

### 4.3 Events expressed by APs

Like VPs and NPs, event-denoting *APs will have only their head adjective annotated as the event*. In the following sentences, the extent of the AP is indicated by brackets, whereas the markable event is in bold face.

(47) a. Ms. Sanders was hit several times and was pronounced [**dead**] at the scene.

b. Pol Pot is considered [**responsible** for the radical policies that led to the deaths of as many as 1.7 million Cambodians].
4.4 Events expressed by PPs

When an event is expressed by means of a PP, *only the head preposition is annotated as the event*. In the examples that follow, the extent of the PP is indicated by brackets, while the markable event is in bold face.

(48) All 75 people that were [on board the Aeroflot Airbus] died.

Note that not all PPs which denote events will have its preposition head tagged as such, but the verb, noun, or adjective head of the complement of that preposition instead, whenever this is the element conveying the event. We mark up the head preposition only *in case the verb, noun, or adjective head within the PP does not denote the event itself*. The following are examples where the element to be tagged as event is the head of the preposition complement (underlined), and not the preposition (bold face). Example (49) illustrates the case for verbs, (50) for nouns, and (51) for adjectives.

(49) He glared at Conroy [without seeing him] and charged back.

(50) The programme began [with an interview with someone from that TV series].

(51) He is often characterized [as eccentric].

4.5 Events expressed by OTHER ELEMENTS

**Locative adverbs.** The locative adverb will be annotated as event.

(52) a. We’re there to stay for a fairly lengthy period.

b. We are here because what happens on this island will also have an impact on the United States.

4.6 Complex event constructions

In the previous sections, we have seen several constructions which involve two event expressions (e.g., copulative, aspectual, or inchoative constructions). In some cases, both of them are verbs. In others, NPs, APs, and PPs are also involved. Please, be aware that this section will need to be taken into consideration when annotating events belonging to any of the part of speech categories detailed in the preceding sections.

The following subsections provide systematic guidelines on how to mark up these constructions. In order to facilitate their annotation, the table in appendix B summarizes these guidelines into a convenient chart.
4.6.1 Copulative constructions

Copulative constructions are VPs headed by verbs like *be* or *seem*, and which have an NP (53), AP (54), or PP (55) as complement.


(54) If, in spite of everything, we will not [be] [ready], we will ask the United States to delay the operation.

(55) Zarei [was] [in] charge of a program to clean cities from corruption.

In these constructions, both the verbal predicate and the predicative complement will be marked up. All of the involved elements (verb, NPs, APs, or PPs) will be annotated according to the rules specified in the previous sections. In the examples above, the copulative predicate is in bold face, its complement head in italics, and the elements to annotate are delimited with square brackets.

4.6.2 Aspectual constructions

These consist of an aspectual verb (e.g., *begin*, *stop*, *end*, *keep*) or noun (*beginning*, *ending*), and an event-denoting complement, which can be expressed by either a VP (56a-b) or an NP (56c). Both the aspectual predicate and its complement will be tagged as independent events.

In the sentences below, the aspectual predicate is in bold face, its complement head in italics, and the two elements to annotate are delimited by square brackets. The sentences in (56) illustrate cases in which the aspectual predicate is a verb, whereas the sentences in (57) exemplify cases involving aspectual nouns.

(56) a. US did not [stop] [interfering] in other countries’ policies.
   b. They probably would have [began] [responding] to President Reagan’s 600 ships plan with new construction.

(57) a. The banks must wait at least 30 days before [closing] the [purchase].
   c. Mr. Bush and his aides were leaning toward a military [conclusion] of the [crisis].
4.6.3 Inchoative constructions

Inchoative constructions in English express the coming to existence of a situation. They generally involve the presence of verbs like become and get, in addition to their complement, which denotes the resulting situation or process.

Both the inchoative predicate (in bold face) and the complement expressing the resulting situation (in italics) will be annotated as events:

(58) a. They aren’t being allowed to leave and could [become] [hostages].
    b. The President Ilham Aliyev [got] [acquainted] with reconstruction works in Vahid garden and National Park.
    c. The public clamor was so great that they [got] [scared] and a substitute was adopted appointing a committee to investigate the property.

4.6.4 Light verb constructions

These involve a verb of very light semantic content (e.g., make, get, do, have, take, put, set, let) and a nominal event acting as its selected complement. In these situations, both the verbal and nominal elements are tagged as events. Below, the light verb is in bold face whereas the nominal is in italics.

(59) a. Several pro-Iraq [demonstrations] have [taken] place in the last week.
    b. They will definitely [take] into [consideration] our readiness.

4.6.5 Causative constructions

Causal constructions involve one of the following causative predicates, or similar ones, in their causative senses: cause, stem from, lead to, breed, engender, hatch, induce, occasion, produce, bring about, produce, secure. Two different constructions can be distinguished here:

1. EVENT\text{\textsubscript{e\textsubscript{1}}} cause\text{\textsubscript{e\textsubscript{2}}} EVENT\text{\textsubscript{e\textsubscript{3}}}. The causal expression (\text{\textsubscript{e\textsubscript{2}}}), its logical subject (\text{\textsubscript{e\textsubscript{1}}}) and its event complement (\text{\textsubscript{e\textsubscript{3}}}) are tagged as independent events –indicated with square brackets in the example below.

   (60) The [rains\textsubscript{e\textsubscript{1}}] [caused\textsubscript{e\textsubscript{2}}] the [flooding\textsubscript{e\textsubscript{3}}].

2. ENTITY cause\text{\textsubscript{e\textsubscript{1}}} EVENT\text{\textsubscript{e\textsubscript{2}}}. Both the causal expression (\text{\textsubscript{e\textsubscript{1}}}) and its event complement (\text{\textsubscript{e\textsubscript{2}}}) are tagged as independent events.

   (61) John [caused\textsubscript{e\textsubscript{1}}] the [fire\textsubscript{e\textsubscript{2}}].
4.6.6 Constructions with functional nouns

Examples of functional nouns are: *temperature, size, weight, population, intensity*, etc. They take an individual as argument (denoting, e.g., a person, physical location, group of individuals, etc.) and return a specific value on an appropriate scale, which can be numeric or not (e.g., *high, low; big, small; hot, cold;* etc.). Functional nouns can appear in three different constructions. In all of them, the functional noun will be marked up as event, together with the main verb of its main clause. Some examples are provided below for different types of constructions, where all the markable expressions are in square brackets. In addition, the functional noun is in bold face and the main verbal predicate of its clause, in italics.

1. **NOUN*functional* is X.**

   (62) a. The current USA [population] [is] above 300 million.
   b. An appraisal of the house indicated its market [value] [is] $150000.

2. **INDIVIDUAL has a NOUN*functional* of X.**

   (63) a. Catalonia [has] a [population] of around 7 million people.
   b. This noise originated from cosmic radiation and [had] a [temperature] of 3 K.

3. **NOUN*functional* changes/raises/drops/increases/*... (from X) (to Y).**

   (64) In the nine months, [net] [rose] 4.3% to $525.8 million, from $504.2 million last year.

4.7 Multiword expressions

We consider as multiword expressions the following constructions:

- **Phrasal verbs** – or equivalently, verb-particle constructions (refer to section 4.1)
- **Idioms** (section 4.1).
- **Named events** expressed by several lexical items; e.g., *The Civil War* (section 4.2).
- **Sortal states** expressed by several lexical items; e.g., *professor emeritus of mathematics* (section 4.2).

The tag extent will comply with the general guidelines for annotating VPs, NPs, APs, and PPs. However, the annotator will indicate that the event is expressed by means of a multiword expression (see the annotation tool manual for further details).
4.8 Expressions referring to several event instances

Some event-denoting expressions refer to two or more instances of the same event type. For example, sentence (65) has only one verb (in bold face) which nevertheless denotes two separate events, each of them anchored to a different temporal expression –i.e., Monday vs. Tuesday.

(65) John taught on Monday and Tuesday.

Another example:

(66) John taught twice on Monday.

In the case of events denoted by nouns, multiple instances can be expressed with the use of plural:

(67) This February, after several delays, the Hammersmith Hospital registrar admitted that he couldn’t promise anything before 1993.

Because there is only one expression, we can introduce only one event tag, even though there is need for more than one event reference. We will mark the event expression following the guidelines just presented for annotating event extents, and then indicate how many event instances the expression is referring to. If the precise number is not clear (for instance, in the case of plural nouns, as in example (67) above), we will write down the comment: cardinality=plural –note that it contains no blank spaces, and it is all in lower case. For further details, refer to the annotation tool manual.

5 Event attributes

There are nine different attributes which need to be annotated for the event tag.

1. Class
2. Part-of-speech (pos)
3. Tense
4. Aspect
5. Polarity
6. Modality
7. Type
8. Genericity
9. Cardinality

The function and possible values which each of these attributes can hold are laid out in the following subsections.
5.1 Class

Each event should be marked up as belonging to one of the following classes:

- Reporting
- Perception
- Aspectual
- I_action
- I_state
- State
- Occurrence

Note, however, that, due to the polysemous nature of words, the same predicate can often be classified in different ways, depending on the context in which it is used. The following subsections describe each class in detail.

**Reporting.** Reporting events describe the action of a person or an organization declaring something, narrating an event, informing the addressee(s) about a situation, and so on. Some verbs which express this kind of event are *say, report, tell, explain*, and *state*.

(68) a. Punongbayan said that the 4,795-foot-high volcano was spewing gases up to 1,800 degrees.
    
    b. No injuries were reported over the weekend.
    
    c. According to President Obama, the plan will double the U.S. capacity to generate renewable energy.

**Perception.** This class includes events involving the physical perception of another event. Such events are typically expressed by verbs like *see, watch, glimpse, behold, view, hear, listen*, and *overhear*.

(69) a. Witnesses tell Birmingham police they saw a man running.
    
    b. "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 for focusing on different parts of the temporal structure of a given event, including the event’s beginning, intermediate, or final part. This device consists on a predicate which selects an event as its argument, and points to some structural aspect of the event. Note that this predicate can be either a verb (e.g. *begin*) or a noun (e.g. *beginning*). We will classify as aspectual events those predicates expressing:

- Initiation: *begin, start, commence, set out, set about, lead off, originate, initiate*.

- Reinitiation: *restart, reinitiate, reignite* (in its metaphoric sense, as in *That speech reignited the senator’s campaign*).
• Termination: stop, 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.

A couple of examples:

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

b. All non-essential personnel should **begin** evacuating the sprawling base.

**I Action.** I Action stands for *intensional action*. I Actions are dynamic events selecting for an event-denoting argument, which must be explicitly present in the text. The label *intension* is used for historical reasons here, and I Actions and I States actually cover more than would be denoted by *intension*.

The class I Action compares with classes Reporting, Perception, Aspectual, and I State (this last one described next) in that all five refer to events that select a second event as a complement, where this second event is commonly expressed by a subordinated clause, a nominalization, or an untensed VP.

Nevertheless, classes Reporting, Perception, and Aspectual differ from I Action due to their very specific semantics. And I Actions and I States can be distinguished by the fact that the former are dynamic events, whereas the second are stative.

For the most part, the events that should be tagged as I Actions form a closed class. The following list, where I Actions are in bold face and the events they select for are underlined, is representative (but not exhaustive) of the types of events included in this class:

• attempt, try, scramble:
  (71) a. Companies such as Microsoft or a combined worldcom MCI are **trying** to monopolize Internet access.

b. Israel has been **scrambling** to buy more masks abroad.

• investigate, investigation, look at, delve:
  (72) a. The Organization of African Unity will **investigate** the Hutu-organized genocide of more than 500,000 minority Tutsis.

b. A new Essex County task force began **delving** Thursday into the slayings of 14 black women.

• delay, postpone, defer, hinder, set back:
  (73) Israel will ask the United States to **delay** a military strike against Iraq.

• avoid, prevent, cancel:
Palestinian police prevented a planned pro-Iraq rally by the Palestinian Professionals’ Union.

Explicit performative predicates like some of those exemplified below (e.g., ask, order, authorize, claim, etc.) are also included here.

- ask, order, persuade, request, beg, command, urge, authorize:
  
  (75) a. Iraqi military authorities ordered all Americans and Britons in Kuwait to assemble at a hotel.
  
  b. They were asked to take along important papers.
  
- promise, offer, assure, propose, agree, decide:
  
  (76) Germany has agreed to lend Israel 180,000 protective kits against chemical and biological weapons, and Switzerland offered to lend Israel another 25,000 masks.
  
- swear, vow.
- name, nominate, appoint, declare, proclaim.
- claim, allege, suggest.

I_State. I_State stands for intensional state. Like I_Actions, I_State events select an argument that expresses any sort of event. Unlike I_Actions, however, the I_State class is used for events which are states.

Also like I_Actions, the event complement selected by I_States can be expressed by subordinated clauses (77-78), nominalizations (79), or untensed VPs (80)

(77) Russia now feels [the US must hold off at least until UN secretary general Kofi Annan visits Baghdad].

(78) Once they get that extinguished, they hope that [residents will begin returning to their homes].

(79) “There is no reason why we would not be prepared for [an attack].”

(80) The agencies fear they will be unable [to crack those codes to eavesdrop on spies and crooks].

The following list of I_State predicates is, once again, representative but not exhaustive.

- believe, think, suspect, imagine, doubt, feel, be conceivable, be sure:
  
  (81) a. “We believe that [his words cannot distract the world from the facts of Iraqi aggression].”
  
  b. Analysts also suspect [suppliers have fallen victim to their own success].
  
  c. Russia now feels [the US must hold off at least until UN secretary general Kofi Annan visits Baghdad].
d. It is conceivable that [a larger eruption will take place in few hours].
e. He said he was sure that [a larger eruption would happen].

- want, love, like, desire, crave, lust:
  (82) a. “They don’t want [to play with us],” one U.S. crew chief said.
  b. We aim at triggering associations that will generate lust for [change].
  c. An occupation Israel would love [to end], but ...

- hope, expect, aspire, plan:
  (83) a. “We’re expecting [a major eruption],” he said in a telephone interview early today.
  b. Once they get that extinguished, they hope that [residents will begin returning to their homes].
  c. We aim at [triggering associations that will generate lust for change].

- fear, hate, dread, worry, be afraid:
  (84) a. The agencies fear [they will be unable to crack those codes to eavesdrop on spies and crooks].
  b. They were afraid [to stay].

- need, require, demand

- be ready, be eager, be prepared
  (85) a. The young industry’s rapid growth also is attracting regulators eager [to police its many facets].
  b. “There is no reason why we would not be prepared for [an attack]”.

- be able, be unable
  (86) The agencies fear they will be unable [to crack those codes to eavesdrop on spies and crooks].

**State.** States describe circumstances in which something obtains or holds true. Note that the class State does not contain states that have been tagged as I_States. Some examples appear in bold face below:

(87) a. It is the US economic and political embargo which has kept Cuba in a box.

  b. Colonel Collins has been the co-pilot before, but this time she is the boss.

  c. Worries however grew about the safety of Americans and other Westerners trapped in Iraq and Kuwait.

  d. Iraq has 17 million residents.

---

4Note that since all I_State events necessarily require an event-denoting complement, an example like John loves Paul’s cousin would not be considered an I_State.
Occurrence. This class includes all of the many other kinds of events that describe something that happens or occurs in the world. Some examples are given as illustration:

(88) a. The Defense Ministry said 16 planes have landed so far with protective equipment against biological and chemical warfare.

    b. Mordechai said all the gas masks from abroad would arrive soon and be distributed to the public, adding that additional distribution centers would be set up next week.

    c. Two moderate eruptions shortly before 3 p.m. Sunday appeared to signal a larger explosion.

5.2 Part of Speech

This attribute captures syntactic distinctions among the expressions that are marked as events. It can have the following values: VERB, NOUN, ADJECTIVE, PREP, OTHER, which are distinguished using standard criteria in linguistics.

The overall annotation task is structured into subtasks based on the part of speech of event expressions. For that purpose, there has been a prior, automatic process of part of speech tagging. The result of this processing will be presented in the annotation tool as the default value of the part of speech attribute. However, annotators will have to change this value in case it is not correct.

Below, we provide some examples of each part-of-speech for the sake of guidance:

1. Verbs: Including both finite and non-finite forms. Sentences in the first example have finite forms signaled in bold face, whereas those in the second illustrate the use of non-finite forms.

(89) a. A fresh flow of lava, gas and debris erupted there Saturday.

    b. Amir may have been trying to impress Har-Shefi.

(90) a. King Hussein arrived in Washington yesterday seeking to gain support for a new initiative.

    b. Prime Minister Benjamin Netanyahu called the prime minister of the Netherlands thank him for thousands of gas masks.

2. Nouns:

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

    b. King Hussein arrived in Washington yesterday seeking to gain support for a new initiative.

3. Adjectives:

(92) a. A Philippine volcano, dormant for six centuries, began exploding with searing gases, thick ash and deadly debris.
b. There is no reason why we would not be ready.

4. Prepositions:

(93) a. All 75 people on board the Aeroflot Airbus died.
    b. No woman has been in charge of a mission until now.
    c. Ogden Projects closed yesterday at $26.875, down 75 cents.
    d. She says this puts the very existence of women’s families at risk.

5. Other: Including locative adverbs.

*Locative adverbs:*

(94) a. We’re there to stay for a fairly lengthy period.
    b. We are here because what happens on this island will also have an impact on the United States.

5.3 Tense, Aspect

The tense and aspect attributes capture standard distinctions among the grammatical categories of verbal phrases. The tense attribute can have any of the following values:

- **PRESENT**: for events that occur at the time of the speech act.
- **PAST**: for events that occurred before the speech act.
- **FUTURE**: for events that will occur after the speech act.
- **INFINITIVE**: for events marked with infinitival *to*.
- **PRESPART**: for forms marked with *-ing* and not preceded by the progressive auxiliary *be*.
- **PASTPART**: for past participle forms (many of which take an *-ed* or *-en* suffix) which are not preceded by the perfective auxiliary *have* or the passive auxiliary *be*.
- **NONE**: for forms which appear in the bare form, such as immediately following a modal auxiliary like *can* or *would*.

On the other hand, the aspect attribute can have the following values:

- **PROGRESSIVE**: for events which can generally be described as continuous or ongoing, marked with the auxiliary *be* plus a verb taking an *-ing* suffix.
- **PERFECTIVE**: for events which can generally be described as completed, marked with the auxiliary *have* plus a past participle verb form (often taking an *-ed* or *-en* suffix).
• **PERFECTIVE PROGRESSIVE**: for events which are marked for both perfective and progressive.

• **NONE**: for events which are in the simple present, past, or future, with no progressive or perfective marking.

What follows provides some guidelines for choosing among the possible `tense` and `aspect` values.

### 5.3.1 Finite Verbs

**Tense** and **aspect** attributes will be established as indicated in the following examples:

1. **Active Voice.**

   **tense=“PRESENT”**
   
<table>
<thead>
<tr>
<th>Verb group</th>
<th>aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>teaches</td>
<td>NONE</td>
</tr>
<tr>
<td>is teaching</td>
<td>PROGRESSIVE</td>
</tr>
<tr>
<td>has taught</td>
<td>PERFECTIVE</td>
</tr>
<tr>
<td>has been teaching</td>
<td>PERFECTIVE PROGRESSIVE</td>
</tr>
</tbody>
</table>

   **tense=“PAST”**
   
<table>
<thead>
<tr>
<th>Verb group</th>
<th>aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>taught</td>
<td>NONE</td>
</tr>
<tr>
<td>was teaching</td>
<td>PROGRESSIVE</td>
</tr>
<tr>
<td>had taught</td>
<td>PERFECTIVE</td>
</tr>
<tr>
<td>had been teaching</td>
<td>PERFECTIVE PROGRESSIVE</td>
</tr>
</tbody>
</table>

   **tense=“FUTURE”**
   
<table>
<thead>
<tr>
<th>Verb group</th>
<th>aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>will teach</td>
<td>NONE</td>
</tr>
<tr>
<td>is going to teach</td>
<td>NONE</td>
</tr>
<tr>
<td>will be teaching</td>
<td>PROGRESSIVE</td>
</tr>
<tr>
<td>is going to be teaching</td>
<td>PROGRESSIVE</td>
</tr>
<tr>
<td>will have taught</td>
<td>PERFECTIVE</td>
</tr>
<tr>
<td>will have been teaching</td>
<td>PERFECTIVE PROGRESSIVE</td>
</tr>
</tbody>
</table>

2. **Passive Voice.**

   **tense=“PRESENT”**
   
<table>
<thead>
<tr>
<th>Verb group</th>
<th>aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>is taught</td>
<td>NONE</td>
</tr>
<tr>
<td>is being taught</td>
<td>PROGRESSIVE</td>
</tr>
<tr>
<td>has been taught</td>
<td>PERFECTIVE</td>
</tr>
</tbody>
</table>

   **tense=“PAST”**
   
<table>
<thead>
<tr>
<th>Verb group</th>
<th>aspect</th>
</tr>
</thead>
</table>
was taught          NONE
was being taught    PROGRESSIVE
had been taught     PERFECTIVE

tense=“FUTURE”
Verb group      aspect=
will be taught      NONE
is going to be taught   NONE
will have been taught  PERFECTIVE

5.3.2 Verbs preceded by a modal auxiliary

Two different cases are described here:

1. Verbs preceded by have to or ought to. Although have to and ought to are technically not modals, they should be treated and tagged as modals. The characterization of tense and aspect for have to and ought to will be very similar to tense and aspect for finite verbs. Follow the examples below:

   tense=“PRESENT”
   Verb group      aspect=
   has to teach         NONE
   has to be teaching  PROGRESSIVE
   has to have taught  PERFECTIVE
   has to have been teaching  PERFECTIVE PROGRESSIVE

   tense=“PAST”
   Verb group      aspect=
   had to teach         NONE
   had to be teaching   PROGRESSIVE

   tense=“FUTURE”
   Verb group      aspect=
   will have to teach   NONE
   will have to be teaching  PROGRESSIVE

2. Verbs preceded by any other modal auxiliary. Modal auxiliaries in this group include: must, may, might, can, could, shall, should, and would. In this case, attribute tense will be tense=“NONE” The value for aspect will be assigned according the following examples:

   tense=“NONE”
   Verb group      aspect=

---

5Note, however, that need to, be allowed to, and be able to should not be treated or tagged as modals.
could teach          NONE
could be teaching    PROGRESSIVE
could have taught    PERFECTIVE
could have been teaching PERFEFIVE PROGRESSIVE

5.3.3 Non-finite Verbs

A range of subordinate clauses in English contain non-finite verbs. These include infinitival and participial clauses. Some examples are given below.

1. Present Participle. Some examples illustrating the use of this form are:

   (95) a. King Hussein arrived in Washington yesterday **seeking** to gain support for a new initiative.

   b. She came home **wanting** a sandwich.

   c. The kids **asking** for sandwiches are inside.

   Present participle forms can occur also in progressive constructions in which the main verb ends in -ing and is preceded by a form of the verb be (e.g. Sara is sleeping). There are also noun uses (as in **Rowing is fun**) and adjective uses (as in That’s an **inviting** idea).

   However, the PRESPART marking is intended for those cases in which the form occurs in a subordinate clause and it is not preceded by the verb be, as in examples (95). It should also be used when it cannot be clearly determined whether the form corresponds to a present participle (and hence is a verb), an adjective, or a noun. Attribute tense is set to PRESPART and attribute aspect to NONE:

   ```
   tense=‘PRESPART’
   Verb group = seeking
   aspect=NONE
   ```

2. Past Participle. Some examples are:

   (96) a. Steel plates **found** at the scene are being examined by experts.

   b. We catalogued the books **left** behind by the guests.

   c. The memo was sent to candidates **nominated** by the committee.

   Like present participle forms, past participles can also be used as part of passive or perfective constructions. Moreover, they also have uses in which they should be marked as adjectives, e.g. He seems confused.

   Nevertheless, the PASTPART marking is intended for those cases in which the participle occurs in a subordinate clause and it is not preceded by any auxiliary form indicating either passive voice or perfective construction, as shown in examples (96). It should also be used
when the participle cannot be clearly determined to be in either of the other categories. Attribute \textit{tense} is set to \texttt{PASTPART} and attribute \textit{aspect} to \texttt{NONE}:

\begin{verbatim}
tense=‘‘PASTPART’’,
Verb group aspect=
  found NONE
\end{verbatim}

3. **Infinitive.** Some examples are:

(97) Callahan plans to \textit{release} the information today.

Attribute \textit{tense} is set to \texttt{INFINITIVE}, while attribute \textit{aspect} can receive any of its possible values, as indicated below:

\begin{verbatim}
tense=“INFINITIVE”
Verb group aspect=
  (to) release NONE
  (to) be releasing PROGRESSIVE
  (to) have released PERFECTIVE
  (to) have been releasing PERFECTIVE,PROGRESSIVE
\end{verbatim}

5.3.4 **Nouns**

\textit{Tense} and \textit{aspect} attributes for nouns will have the \texttt{NONE} value.

\begin{verbatim}
tense=“NONE”, aspect=“NONE”
Examples
  The threat caused considerable attention.
  This is/was/will be an attempt to open negotiations.
  He is/was being a nuisance.
  This has/had been/will have been a concern for many months.
\end{verbatim}

5.3.5 **Adjectives**

Like with nouns, \textit{tense} and \textit{aspect} for adjectives will always have the \texttt{NONE} value. The following examples illustrate:

\begin{verbatim}
tense=“NONE”, aspect=“NONE”
Examples
  The suspect, unwilling to talk, ...
  Her spouse is/is being/has been unwilling to talk.
  Her spouse was/was being/had been unwilling to talk.
  Her spouse will be/will have been happy to talk.
\end{verbatim}
5.3.6 Prepositional Phrases

Similarly to the adjectives and nouns, the tense and aspect attributes for prepositional phrases will be set to NONE.

\[
tense = \text{"NONE"}, \ aspect = \text{"NONE"}
\]

Examples

- Thomson, in India to talk to tourism leaders, ...
- The project is/was/will be in trouble.
- That kid is/was being/ out of control a lot lately.
- The project has/had been/will have been in trouble for many months.

5.3.7 Other Elements

For other elements, the tense and aspect attributes will both be set to NONE.

\[
tense = \text{"NONE"}, \ aspect = \text{"NONE"}
\]

5.4 Polarity

The polarity of an event instance is a required attribute represented by the boolean attribute polarity. Polarity should be set to negative for event instances which are negated. This should be done for any negative example, such as:

(98) a. They did not/didn’t finish the article.
    b. We never finish dinner.
    c. No one came.

Polarity should be set to positive otherwise.

5.5 Modality

The modality attribute is only specified if there is a modal word (i.e. may, might, must, would, should, could, can, ought to, have to, or shall) that modifies the instance. So, the events in bold face in the following sentences:

(99) a. John should leave tonight.
    b. They can’t have been early.
    c. We might be there soon.

will all have the modality attribute with a non-empty value, which will correspond to the literal string of the modal auxiliary form.

Sentences that lack a modal will not receive any value for this attribute.\(^6\)

\(^6\)Recall from above that, though they are not technically modals, ought to and have to should be treated and tagged as modal words. In contrast, need to, be allowed to, and be able to should not be treated or
5.6 Type
Attribute not applicable for the Tempeval 2010 annotation task.

5.7 Genericity
Attribute not applicable for the Tempeval 2010 annotation task.

5.8 Cardinality
Attribute not applicable for the Tempeval 2010 annotation task.
A  Event-denoting expressions

Table 1 summarizes what expressions can be marked up as events, classified by part-of-speech. Code ∀ means in all cases, code ∃ means only in some cases, and code Ø means never. A small comment is added when considered necessary.

Table 1: When to annotate event-denoting expressions.

<table>
<thead>
<tr>
<th>Construction</th>
<th>Annotate</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vs</td>
<td>∀</td>
<td></td>
</tr>
<tr>
<td>Ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prenominal modifiers:</td>
<td>Ø</td>
<td></td>
</tr>
<tr>
<td>Sortal states:</td>
<td>∃</td>
<td>Annotated when functioning as the head of a predicative complement.</td>
</tr>
<tr>
<td>Others:</td>
<td>∀</td>
<td></td>
</tr>
<tr>
<td>Adjs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attributive adjectives:</td>
<td>Ø</td>
<td></td>
</tr>
</tbody>
</table>
| Predicative adjectives:       | ∃        | Annotated when expressing a non-persistent property; i.e., a property that:  
|                               |          | – is clearly fluid; or  
|                               |          | – is temporally bound; or  
|                               |          | – is presented as the opinion of somebody. |
| PPs                           |          |         |
| Predicative complements:      | ∀        |         |
| Other:                        | Ø        |         |
| Locative adverbs:             |          |         |
| Predicative complements:      | ∀        |         |
| Other:                        | Ø        |         |
## B Complex event constructions

Table 2 lists the different complex constructions identified in section 4.6, and indicates what constituents of these constructions need to be marked up as events. In the examples column, the elements to be tagged appear underlined.

Table 2: Complex constructions: What elements to annotate.

<table>
<thead>
<tr>
<th>Construction</th>
<th>What to annotate</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copulative</td>
<td>Annotate both:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– the verbal predicate</td>
<td>\textit{be willing}, \textit{seem ready},</td>
</tr>
<tr>
<td></td>
<td>– the complement</td>
<td>\textit{be the head}, \textit{be CTO},</td>
</tr>
<tr>
<td></td>
<td></td>
<td>\textit{be in charge}, \textit{be on board}.</td>
</tr>
<tr>
<td>Aspectual</td>
<td>Annotate both:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– the aspectual predicate</td>
<td>\textit{stop interfering},</td>
</tr>
<tr>
<td></td>
<td>– the complement</td>
<td>\textit{begin the construction},</td>
</tr>
<tr>
<td></td>
<td></td>
<td>\textit{the outbreak of the war}.</td>
</tr>
<tr>
<td>Inchoative</td>
<td>Annotate both:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– the inchoative predicate</td>
<td>\textit{become hostage},</td>
</tr>
<tr>
<td></td>
<td>– the complement</td>
<td>\textit{get acquainted},</td>
</tr>
<tr>
<td></td>
<td></td>
<td>\textit{get scared}.</td>
</tr>
<tr>
<td>Light verb</td>
<td>Annotate both:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– the light verb</td>
<td>\textit{have a bath},</td>
</tr>
<tr>
<td></td>
<td>– the nominal complement</td>
<td>\textit{take into consideration},</td>
</tr>
<tr>
<td></td>
<td></td>
<td>\textit{make conversation}.</td>
</tr>
<tr>
<td>Causal</td>
<td>Annotate the underlined elements:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– \textsc{event} \textit{causes} \textsc{event}</td>
<td>\textit{The rains caused the flooding},</td>
</tr>
<tr>
<td></td>
<td>– \textsc{entity} \textit{causes} \textsc{event}</td>
<td>\textit{John caused the fire},</td>
</tr>
<tr>
<td>Functional Nouns</td>
<td>Annotate the underlined elements:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– $N_{\text{func}}$ is $X$</td>
<td>\textit{The US population is 300M}.</td>
</tr>
<tr>
<td></td>
<td>– \textsc{entity} has a $N_{\text{func}}$ of $X$</td>
<td>\textit{The US has a population of 300M}.</td>
</tr>
<tr>
<td></td>
<td>– $N_{\text{func}}$ change-of-state $X$ (PP\textit{from}) (PP\textit{to})</td>
<td>\textit{Net rose 43% from 60M}.</td>
</tr>
</tbody>
</table>
References

