

# Timestamping of ACE Relations and Events for 2005

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Lisa Ferro  
[lferro@mitre.org](mailto:lferro@mitre.org)

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# 1 Introduction

Timestamping involves associating a temporal expression with a relation or event. Only those temporal expressions which have been annotated with a TIMEX2 tag can be used as timestamps for relations and events. See the “TIDES 2005 Standard for the Annotation of Temporal Expressions” ([http://timex2.mitre.org/annotation\\_guidelines/2005\\_timex2\\_standard\\_v1.pdf](http://timex2.mitre.org/annotation_guidelines/2005_timex2_standard_v1.pdf)) for how to create TIMEX2 tags. The following document provides guidelines for associating the TIMEX2-tagged expressions with ACE relations and events, documented in the 2005 ACE Relations and Events guidelines (<http://www ldc.upenn.edu/Projects/ACE/docs/>).

The following guidelines have two primary sections. Section 2 discusses how we capture the meaning of the temporal association – e.g., whether an event happened before, during, or after some designated time interval. Section 3 focuses on markability – the structural conditions under which a time expression can and should be associated with a relation/event.

The examples are formatted as follows:

- They are contained in “double quotes.”
- TIMEX2 expressions are in **bold**.
- The relation/event to be timestamped is in *italics*, where feasible.

## 2 Timestamp Types

The timestamps on relations and events capture eight different types of association:

Time-Within, Time-Holds, Time-Starting, Time-Ending, Time-Before, Time-After, Time-At-Beginning, Time-At-End

When there’s some overt lexical marker such as a verb or preposition that indicates the temporal association, it is indicated in [square brackets]. The annotator is not required to mark these lexical indicators. They are identified here simply to highlight the various contexts that create temporal associations. Be aware that the same preposition can convey different temporal relations, depending on the larger context.

### 2.1 TIME-WITHIN

Time-Within is the most common association between a temporal expression and a relation/event. Note that if there is explicit evidence that the relation/event lasted for the entire time interval, you should use Time-Holds, discussed later.

**Relations.** Use Time-Within when the relation exists or holds true at some point within the given interval.

“Jon [*graduated*] from Dartmouth in **1987**.”<sup>1</sup> [verb]

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<sup>1</sup> The relation is here is ORG-Affiliation.Student-Alum. He ceased being a student in 1987, but he started being an alum in 1987, so the best we can do is identify the Time-Within he was both.

“*He once lived in Paris.*” [adverb]  
“*former/current/future Harvard student*” [adjective]  
“*the summer IBM intern*” [noun compound]

**Events.** Use Time-Within when the event occurs within the given interval.

“*The meeting is [scheduled for] next week.*”  
“*China purchased two nuclear submarines from Russia [in] 1999.*”  
“*Justices will hear oral arguments [at] 10 a.m. on Friday*”  
“*They will meet [on] the 20<sup>th</sup>.*”  
“*The bombing occurred [during] the night.*”  
“*The events [of] that night.*”  
“*The police chief has promised that the suspect will be arrested [within] two weeks.*”  
“*They are willing to [delay] the meeting [until] March 30.*”  
“*[At] present, she is being held in jail pending trial.*”  
“*The July 24 demonstration*” [pre-modifier]  
“*They met yesterday/Saturday/last week/two years later/every day...*” [time adjunct]  
“*She was arrested recently.*” [adverb]

### 2.1.1 Sets of Events

A plural or group expression is interpreted as set of multiple events, with each event occurring within (rather than enduring for the length of ) the time interval. Thus, Time-Within is used here, not Time-Holds:

“*There were one million crimes [in] the first seven months of 1992.*”  
“*Internal Affairs has arrested at least 2,600 criminals across the country [over] the past year.*”  
“*[For] decades, Russians obtained weapons from the black market.*”  
“*[In] the those chaotic years, armed gangs left a trail of murder and robbery throughout the countryside.*”  
“*ETA has claimed around 800 killings [in] 32 years*”

## 2.2 TIME-HOLDS

Use Time-Holds when the context explicitly states that the relation or event lasts for the entire time interval. Do not infer the HOLDS association on the basis of what you know about the event or relation. Rely on the explicit lexical indicators to justify HOLDS, such as prepositions like “through” and “for” or modifiers on the time expression like “all”.

**Relations.** Here are some examples of Time-Holds with relations:

“*They always hang out in a bar [all] night.*”  
“*We camped there [for/over/all through/throughout] the summer.*”  
“*We stayed there ([for]) three months.*”  
“*([For]) a lot of the time we just lay on the beach.*”

**Events.** Here are some examples of Time-Holds with events:

- “They were *meeting* [**all**] **night**.”
- “The *demonstration* [lasted (for)] **the whole time**.”
- “**About an hour** was [needed for] *the meeting*.”
- “[It took] us **about five hours** to *fly* to Scotland.”
- “*the three-day meeting*”

Note that, as in the last example, you should take the expression literally. World-knowledge would lead us to infer that the participants in the meeting didn't meet for three solid days, but this should be ignored.

### 2.2.1 Choosing Between Time-Within and Time-Holds

Some contexts make it difficult to tell whether the appropriate association is Time-Within or Time-Holds. This is particularly true when the relation/event is conveyed with a verb in the progressive tense. For example:

“*Jiang, traveling* **Friday** in Myanmar on an official visit...”

Was Jiang traveling in Myanmar all day Friday, or just part of it? The rule of thumb in these cases of uncertainty is to choose Time-Within over Time-Holds. If Time-Holds is true, then Time-Within is also true, but the opposite does not hold. Thus, we choose the label that has the greatest likelihood of being correct.

### 2.3 TIME-STARTING and TIME-ENDING

Use Time-Starting when the context explicitly indicates that the relation or event begins at a given time. Use Time-Ending when the context explicitly indicates that the relation or event ends at a given time. In both cases, it is not necessary that there is explicit evidence that the relation/event endures after/before the starting/ending time, but there typically is an implication that it does so.

**Relations.** Here are some examples of Time-Starting and Time-Ending on relations. They typically fall into one of three linguistic contexts.

1. Some prepositions explicitly convey the notion of starting/ending:

- “*He's worked for Tyco* [since] **July 1991**.” (Time-Starting)
- “*Lisa has not lived in Connecticut* [since] **1995**.” (Time-Ending)

2. Some verb-preposition combinations explicitly convey the notion of starting/ending:

- “*She [began] an affair [in] late 1995 with one of the hospital's security police*.” (Time-Starting)

3. Some verbs directly entail the ending or beginning of a relation. They often come in pairs like buy/sell, marry/divorce, hire/fire.

“**last month**’s [resignation] of the Russian Prime Minister, Yegor T. Gaidar”

[possessive] (Time-Ending)

“The unit it [sold] **two years ago** to a New York investment group.” (Time-Ending on relation between “it” and “unit”; Time-Starting on relation between “unit” and “a New York investment group”.)

**Events.** With events, Time-Starting and Time-Ending are typically conveyed in one of two ways:

1. Some prepositions explicitly convey the notion of starting/ending:

“They met [until] **2:00 a.m.**” (Time-Ending)

2. Some verbs or their nominalizations explicitly convey the notion of starting/ending:

“The talks [ended (on)] **Monday.**” (Time-Ending)

“Lawyers [began] *meeting* **this weekend.**” (Time-Starting)

“In **April of last year**, the CR company [began] *bankruptcy* procedures.” (Time-Starting)

“They [didn’t begin] *meeting* [until] **5 in the afternoon.**” (Time-Starting)

“Forty civilians have been killed since the [start] of *hostilities* **November 10.**”  
(Time-Starting on “hostilities” event; “killed” is illustrated under Time-After.)

### 2.3.1 Using Time-Starting and Time-Ending to Capture Temporal Ranges

Only the endpoints of a range are given TIMEX2 tags. Thus the timestamping must indicate the starting and ending points by associating both timestamps to the relation/event with the appropriate label. Here are some examples of how to use Time-Starting and Time-Ending to capture a time period over which a relation held true:

*We camped in Yellowstone* [from] **June** [through] **September.**” (Time-Starting, Time-Ending)

Note that both Time-Starting and Time-Ending can include the given interval. For example, “We” were in Yellowstone in and beyond June. Also, given our loose interpretation of these terms, the semantics of “through” is not fully captured here. There’s no attempt to convey, via the tags, that they were in Yellowstone through the end of September, which some might argue is implied by the preposition “through.”

## 2.4 TIME-BEFORE

Use Time-Before when the context explicitly states that the relation exists or the event occurs before the given time interval. Time-Before means “before the given time interval,” but its meaning can also include the given time interval. In other words, our

notion of “before” is loose, to mean before-and-within or before-or-within, or simply “before.”

**Relations.** Typically Time-Before is conveyed via a preposition like “before”:

“[Prior to] **1992**, *Smith worked for Time Warner.*”

“[Up to] **now**, *they were happily married.*” (BEFORE-and-WITHIN)

“*The journalists left the city* [before] the bombing commenced **the night of April 13.**”<sup>2</sup>

**Events.** The prepositions “before” or “by” are typically present for Time-Before on events:

“She’s one of the few people *born* [before] **1900.**”

“The initial briefs have to be *filed* [by] **4 p.m. Tuesday**” (BEFORE-or-WITHIN)

There’s one unique construction, in which the days of an event are counted. Here we take the counting of days as an explicit indicator that the event has endured up to this point, and thus use Time-Before rather than simply Time-Within:

“It’s **Day 162 of the hostage crises.**” (BEFORE-and-WITHIN)

## 2.5 TIME-AFTER

Use Time-After when the context explicitly states that the relation exists or holds true after the given time interval, or the event occurs after the given time interval. Like “Time-Before”, the semantics of “Time-After” are loose. It can mean after-and-within, or simply “after.”

**Relations.**

“*They got married* [after] **1972.**” (Per-Social.Family relation; the marriage event is illustrated below)

“*He lived in San Francisco* [after] he got out of the Army in **1969.**”<sup>3</sup>

“*The bank will employ four staff members* [beyond] **2010.**”

**Events.**

“*They got married* [after] **1972.**” (Live.Marry event; the relation is illustrated above)

“*Forty civilians have been killed* [since] **November 10.**” (a set of events occurring AFTER-and-WITHIN a time interval)

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<sup>2</sup> This example shows only the timestamping of the Physical.Located relation. The bombing event would also be timestamped as Time-Within “the night of April 13.”

<sup>3</sup> This example only shows the timestamping of the Physical.Located relation. The relation between (he, Army) would be timestamped Time-Ending 1969.

## 2.6 TIME-AT-BEGINNING and TIME-AT-END

Time-At-Beginning means something happened at the beginning of some time period. Time-At-End means something happened at the end of some time period. These types are a special case of Time-Within, so the notion of at-start and at-end must be explicitly stated, otherwise use Time-Within.

“Sharon *met* with Bill [at the start] of the **three-day** conference in order to plan their separate strategies. After that, they didn’t see one another.” (TIME-AT-BEGINNING)

“The trial began on a **scorching hot day the first week of August**. [At the end] of the **three-week** trial, the lady was *convicted*.” (TIME-AT-END)

“The suspect was *arrested* [within] **two weeks**.” (TIME-AT-END)<sup>4</sup>

## 2.7 Ignore Temporal Associations Within the TIMEX2 Expression

You may notice that many of the temporal expressions used as timestamps have temporal links within them, such as “before,” “after,” “next,” “later,” etc. For example, the following table shows the extents of some TIMEX2 expressions. Note that although they contain temporal linking expressions within them, they each have been normalized to a specific time interval.

Temporal Expression with TIMEX2 Tag	Normalized Form (VAL)
early that year	1992
next summer	2006-SU
a year ago	2004
three days later	2005-03-20
five days after he came back	2005-03-25
three hours before the meeting	2000-03-17T05:30:00

Thus, in creating timestamps on relations and events, you should ignore the internal composition of the temporal expression, and treat such cases exactly as you would simpler expressions with the same normalized form.

## 3 Markability

This is the first year we have attempted to timestamp relations and events. We are therefore limiting timestamping to contexts in which the temporal expression explicitly (syntactically) modifies the relation or event, and to a handful of other easily identified structures that occur only with events. That is, in contrast to the assignment of arguments and other Values, *the assignment of timestamps is much more restrictive*. Strict local

<sup>4</sup> Different people get different readings of this example. For some, it explicitly means the arrest took place at the end of the two-week period, because of the past tense of the verb. For others, it means anytime within the two week period, so that Time-Within would be the correct temporal association. Use your best judgment on a case-by-case basis.



syntactic association must exist for a timestamp to apply, and *nothing beyond this is permitted, including timestamps that could arguably meet the Reasonable Reader Rule* (see next paragraph). In addition, as with all Values, a temporal expression can only serve as a timestamp if it is within the “extent” of the relation or event. (However see the Appendix for cases where the extent itself is controversial.) For a discussion of what constitutes the proper extent, please consult the 2005 ACE Events and Relations Annotation Guidelines.

Beware that the “Reasonable Reader Rule” used in the annotation of ACE relations and events does not transfer cleanly to the domain of timestamping. Under the RRR, the annotator would only associate a temporal expression with a relation/event if the only reasonable interpretation of the sentence is that the time interval must be involved. But when it comes to time, every time interval in the past, present, or future can be associated with every thing that has occurred, or will ever occur. So what the RRR really means in this case is that the speaker intended to add temporal information to the relation/event being conveyed. It is precisely because speaker intent is so difficult to discern that we have imposed much stricter structural constraints on timestamping. We anticipate that annotators will not need to invoke the RRR, because of the strict structural restrictions already in place for timestamps.

So, to review, a TIMEX2 expression is associated with a relation/event iff:

1. It meets explicit structural requirements (detailed below) AND
2. It is within the extent of the relation/event.

### **3.1 Markable Timestamping Constructions**

There are two constructions that always result in a timestamped relation/event:

1. The association between the relation/event and temporal expression is made via an explicit verbal construction.
2. The temporal expression syntactically modifies the relation/event. The temporal expression in this case is either
  - (a) a TIMEX2 expression, OR
  - (b) a temporal modifier syntactically anchored by a TIMEX expression.

These are discussed and illustrated in the remainder of section 3.1.

#### **3.1.1 Explicit Verbal Constructions Conveying Temporal Associations**

This class of markable timestamps comes about by means of one of the many verbs of scheduling, occurrence, aspect and so on. The relation/event is overtly and explicitly linked to a time expression via one of these verbs. Note that timestamped relations (as opposed to events) in this context are rather rare, because the extent of relations is often a noun phrase, and thus does not include the “scheduling verb,” so the temporal expression is not accessible either.

Verbs of Scheduling and Planning

**Events:**

“*The meeting* had been [scheduled] **March 1** in Philadelphia.”

“They are willing to [postpone] the *extradition* [until] **January 1.**”

Verbs of Occurrence and their nominalizations

**Events:**

“*The attack* [occurred] **just three weeks after their vacation in Africa.**”

“*The attack’s* [occurrence] **just three weeks after their vacation in Africa...**”

“*Conflict* [marked] **2003** in this region.”

Verbs of Aspect (Beginning/Ending/Interruption/Continuation etc.) and their nominalizations)

**Relations:**

“*The bank will* [continue] to employ four staff members [beyond] **2010**”

**Events:**

“*The meeting* [began] at **4 p.m.**”

“the [start] of the *bombing* on **April 13**”

“*The merger* will likely be [completed] **later this year.**”

“In **April of last year**, the CR Company [began] *bankruptcy* procedures.”

“The union [ended] its *strike* on **Monday.**”

“Protestors [interrupted] the *meeting* on **the 24<sup>th</sup>.**”

“**Friday night** U.S. forces [continued] to *bomb* Fallujah”

“U.S. forces [continued] **Friday night** with the *bombing* of Fallujah.”

Other Verbal Constructions

**Relations:**

“**January 14** [is] *the day he will become a US citizen.*”

**Events:**

“**About an hour** [was needed] for *the meeting*”

“The *demonstration* [lasted] **all day.**”

“**The past year** [has seen] *car hijackings, explosions, kidnappings, mysterious fires* and *shootouts.*”

“**March 1** [is] *the day everyone will meet.*”

### 3.1.2 TIMEX2 Expression Syntactically Modifies the Relation/Event

For this class of markable timestamps the temporal expression directly syntactically modifies the relation or the event. In many of these cases, the TIMEX2 expression is actually contained within a prepositional phrase that is acting as temporal modifier; we still consider this as an instance of the TIMEX2 expression acting as a modifier.

**Relations:**

For the Possessive, Preposition, and PreMod classes, the temporal modifier typically takes the form of a prepositional phrase or a pre-modifier on Argument 1.

#### Possessive Syntactic Class

*“America’s Department of Defense [during] **the 1980s**”*

*“The UN’s **1962** envoy”*

*“John’s **former** wife”*

#### Preposition Syntactic Class

*“Health officials in D.C. [in] **the 1970s** warned residents to stay indoors on hot days.”<sup>5</sup>*

*“The **recent** CEO of Microsoft”*

#### PreMod Syntactic Class

*“the American envoy [from] **1992-1996**”*

*“the **former** American envoy left the talks early”<sup>6</sup>*

Participial Syntactic Class – the temporal expression typically takes the form of an adverbial modifying the participle.

*“the crowd trapped inside the compartment **all day**”*

*“the crowd trapped inside the compartment [on] **that blistering day**”*

*“the private sector body **currently** based in Norwalk, Conn”*

Verbal Syntactic Class – the temporal expression modifies the copula or verb that justifies the “Verbal” class.

*“Coca Cola Co. has been based in Atlanta [since] **the early 1900s**.”*

*“[Prior to] **1992**, Smith worked for Time Warner.”*

*“British Airways bought seven Boeing 777s **last year**.”*

Other Syntactic Class – The temporal expression modifies the tensed clause or NP containing both arg1 and arg2.

*“[On] **Thursday** thousands of Palestinians rushed the Israeli checkpoint.”*

Physical.Located(thousands of Palestinians, the Israeli checkpoint)

*“He was campaigning in his home state of Tennessee on **Wednesday**.”*

Physical.Located(He, his home state of Tennessee)

*“**last month**’s [resignation] of the Russian Prime Minister, Yegor T. Gaidar”*

(Org-Affiliation.Employment(Gaidar, Russian))

*“In the West Bank [on] **Friday**, a passenger was wounded when an Israeli bus came under fire.” (Physical.Located(a passenger, the West Bank))*

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<sup>5</sup> Note that the timestamp would not apply to “health officials in DC” if the example were “During the 1970s, health officials in DC warned residents...”, because here temporal phrase is modifying “warned.”

<sup>6</sup> “early” is not a TIMEX2 expression. Note that if the example were “The American envoy left the talks at noon.”, the time expression “noon” only applies to when s/he left the talks, NOT to the relation between “American” and “envoy”.

“*Muslim youths **recently** staged a half dozen rallies in front of the embassy.*”  
 (Physical.Near(Muslim youths, the embassy))

“*Zidane led France to the European title **this year**.*” (Org-Aff.Sports-Aff(Zidane, France))

“*Bush announced withdrawal from the ABM Treaty on **Thursday** at the White House.*”  
 (Physical.Located (Bush, White House) TIME-WITHIN ‘Thursday’)

“*In Moscow on **Thursday**, Putin offered Bush specifics.*”  
 Physical.Located (Putin, Moscow) TIME-WITHIN ‘Thursday’  
 Physical.Located (Bush, Moscow) TIME-WITHIN ‘Thursday’

Remember that you should not allow a timestamp to apply to a constituent it is not modifying, even if it is in the extent of a relation. So, for example, the following temporal expressions would NOT apply to the expressed relation:

\*“*Thousands of Palestinians, angered by **last week**’s events, rushed the Israeli checkpoint.*”  
 → “last week” does not syntactically modify  
 (Physical.Located(Palestinians, checkpoint))

\*“*Muslim youths staged a half dozen rallies in front of the **former** embassy.*”  
 → “former” does not syntactically modify (Physical.Located(youths, embassy))

### Events:

The following examples of timestamped events show a TIMEX2 expression modifying an event “trigger” (see the 2005 ACE Event guidelines for a discussion of that term). Timestamping for events is not actually limited to temporally modified event triggers; see section 3.2.3 for examples of this.

“the **1-day** walk-out”  
 “**yesterday**’s attack”  
 “Forty civilians have been *killed* [since] **November 10**.”  
 “The CEO *died* **Friday**.”

### 3.1.3 Temporal Modifiers Anchored with TIMEX2 Expressions

In this type of construction, a temporal clause or phrase, syntactically modified by a TIMEX2 expression, modifies the relation/event. Such constructions have temporal subordinating conjunctions such as “when” and “after”, which are not given TIMEX2 tags. Nevertheless, they can inherit a temporal association if properly anchored with a TIMEX2 expression. Thus, in the following examples the relations/events in both the dependent and matrix clauses are able to be timestamped:

**Relation:**

“*He lived in San Francisco* [after] *he got out of the Army* [in] **1969.**”  
Physical.Located (he, San Francisco) TIME-AFTER “1969”  
Org-Aff.Employment (he, Army) TIME-ENDING “1969”

**Event:**

“*Bush and Jiang discussed* the proposal [when] *they met in Shanghai* **this fall.**”  
Contact.Meet (discussed) TIME-WITHIN “this fall”  
Contact.Meet (met) TIME-WITHIN “this fall”

**Both Relation and Event:**

“*The journalists left the city* [before] *the bombing* commenced **the night of April 13.**”  
Physical.Located (The journalists, the city) TIME-BEFORE “the night of April 13”<sup>7</sup>  
Conflict.Attack (bombing) TIME-WITHIN “the night of April 13”

In the following examples, the anchored expression is a phrase (a prepositional phrase). Note that such phrases are very much like the temporal clauses shown above, except here the events are nominalized (flood, meeting).

**Relation:**

“*John bought a boat* [after] **the 1995 flood.**”  
Agent-Art.Owner (John, a boat) TIME-AFTER 1995

**Event:**

“*Sharon met* with Bill [before] **the eight-hour meeting.**”  
Contact.Meet (met) TIME-BEFORE “eight-hour”  
Contact.Meet (meeting) TIME-HOLDS “eight-hour”

## **3.2 Other Markable Constructions for Events**

### **3.2.1 Witnessing Verbs**

Verbs of witnessing, when timestamped, automatically allow the event that is witnessed to be timestamped as well. This context does not apply to relations.

“**Yesterday** a pedestrian [saw] machine-gun-wielding men in suits and ties jump out of their cars and *blast away* at one another.”

### **3.2.2 Event Triggers as Modifiers**

In some cases the event trigger is a modifier, rather than a predicate or an argument. This happens with present participles being used as nominal pre-modifiers (see “2.1 Resultatives and resultative-like events” in the Event Guidelines). The present participle can modify a noun that is timestamped, or it can modify an argument of a predicate that is

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<sup>7</sup> Note that we have no way of capturing that the relation *ended before* the night of April 13. Thus we simply use Time-Before. The explicit temporal preposition trumps the implied ending relation conveyed with the verb “left.”

timestamped. The close association between the trigger and the temporal expression in these cases allows the event to be timestamped as well.

“The *rioting* crowd at the **2004** inauguration...”

“The *rioting* crowd at the inauguration in **2004** ...”

“The *arresting* officer at **Thursday night**’s accident scene.”

“The *rioting* crowd approached the Capitol [by] **late afternoon**.”

However, pay close attention to the purpose of the constituent containing the temporal expression. There are cases where the temporal expression only applies to the element that governs it. Thus, in the following, the temporal expression would NOT be associated with the present participle event trigger.

\*“The *arresting* officer who testified at **Monday**’s trial.”

→ The arrest did not take place on Monday, the trial did.

### 3.2.3 Timestamped Predicates with Adjectival or Nominal Event Triggers

In this class of constructions, the event is conveyed by the predicate as a whole, and the predicate (verb) is clearly timestamped. However, the official annotated “trigger” for the event is either an adjective or a noun within the predicate (in the latter case, due to the “Stand-Alone Noun Rule.”) In these cases, the timestamp is allowed to filter down to the adjective or noun trigger, and thus to the event itself.

The following examples are timestamped versions of those found in section 2.3.3.1.1 Verb+Noun in the Event Guidelines. The underlining from those guidelines, which shows the non-trigger (but timestamped element), has been duplicated here.

“The crash left 20 people *dead* [on] **Friday**.”

“Foo Corp. had previously filed *Chapter 11* [in] **2001**.”<sup>8</sup>

“**Today**, leaders held a *meeting* in Beijing.”

“The company had to pay a *fine* of \$300,000 [in] **1991**.”

“**Monday**, Hamas launched an *attack* [on] **Monday**.”

“[In] **1969** he carried out the *assassination*.”

“The presidents met for **75 minutes** for a working **lunch**.”

“Brentwood Academy responded with a *lawsuit* **the next day**.”

Additional examples:

“[At] **present**, she is being held in *jail* pending trial.”

“[In] **the those chaotic years**, armed gangs left a trail of *murder* and *robbery* throughout the countryside.”

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<sup>8</sup> “previously” is not a TIMEX2 expression.

### 3.3 When Not to Apply a Timestamp

Except for the cases listed in section 3.2 above, you should follow the restriction of only applying timestamps to elements they directly modify, even if the temporal expression could be accessible via the Reasonable Reader Rule. There are some cases where it can be easy to violate this restriction. We call your attention to them here.

**Multiple Verbs, One Timestamp.** Take care when timestamping events with triggers in sentential complements. The temporal modifier often applies to the matrix verb, not the embedded event trigger, and thus in these cases the event should NOT be timestamped.

“**Yesterday** John tried to *kill* Mary.” (“yesterday” applies to “tried,” not “kill”)  
“**Last year** AOL wanted to *buy* Time Warner.” (“last year applies to “wanted,” not “buy”)

See also section 3.4 Ambiguous Attachments.

**Multiple Events, One Timestamp.** When there are multiple event triggers in a single construction but only one timestamp, be sure to limit the timestamp to the event it is directly modifying. Do not apply the timestamp to nearby related events.

“**Friday’s** *explosion* left at least 30 *dead* and dozens *injured*.”  
Conflict.Attack (explosion) TIME-WITHIN “Friday”  
(no timestamp on “dead” and “injured”)

“The *explosion* left at least 30 *dead* and dozens *injured* on **Friday**.”  
Life.Die (dead) TIME-WITHIN “Friday”  
Life.Injure (injured) TIME-WITHIN “Friday”  
(no timestamp on “explosion”)

“**Sunday’s** *attack* killed seven and *injured* twenty.”  
Conflict.Attack (attack) TIME-WITHIN “Sunday”  
(no timestamp on “killed” and “injured”)

“The *attack* killed seven and *injured* twenty on **Sunday**.”  
Life.Die (killed) TIME-WITHIN “Sunday”  
Life.Injure (injured) TIME-WITHIN “Sunday”  
(no timestamp on “attack”)

### 3.4 Ambiguous Attachments

Our basic rule in applying timestamps is to only apply them to the constituents they modify, except for special cases for events in section 3.2. However, it is not always clear

what constituent is being modified, particularly when the temporal expression comes at or toward the end of a complex sentence.

“The Supreme Court *agreed to hear* the case on **Friday afternoon**”

“The Ministry of Internal Affairs *recorded* more than one million "serious" *crimes* in **the first seven months of 1992.**”

“During **the month of October**, Russian customs authorities *reported* the following haul of goods destined for *illegal shipment* abroad: ...”

First, annotators should use the context of the document wherever possible to disambiguate the meaning. For example, in the first case above, the context of the article (not shown here) made it quite clear that the Supreme Court wouldn't be hearing the case until Monday morning. The timestamp “Friday afternoon” only applies to the verb “agreed”, which is not a markable event in this case.

If context does not help disambiguate the meaning, apply the timestamp to the closest possible attachment point. Thus, for the second example above, the timestamp would apply to “crimes,” not “recorded.” In the third, the timestamp would apply to “reported” (not a markable event).

### 3.5 Combinations of Relations and Events

Some constructions yield both a relation and event, and the timestamp can often apply to both.

Here an event results in a Physical.Located relation. Both can be timestamped:

“Bob *drove to Boston* in **1991.**”  
Transport.Person (drove) TIME-WITHIN '1991'  
Physical.Located (Bob, Boston) TIME-WITHIN '1991'

Here the event is timestamped and location-stamped, resulting in a timestamped location relation:

“Rumsfeld will *meet* with the Russian defense minister **next week** in Brussels.”  
Contact.Meet(meet) TIME-WITHIN 'next week'  
Physical.Located (Rumsfeld, Brussels) TIME-WITHIN 'next week'  
Physical.Located (minister, Brussels) TIME-WITHIN 'next week'

Here the same timestamped verb generates both an event and relation:

“Ellen and Terry got *married* [after] **1972.**”  
Life.Marry (married) TIME-AFTER 1972



Per-Social.Family (Ellen, Terry) TIME-AFTER 1972

Here is another case where the same timestamped verb generates both an event and two relations. But notice that the attribute type is different for each. “Sold” between subsidiaries conveys both an ending of one relation and the beginning of another. But Time-Within applies to the “sell” event itself.

“The unit it ***sold two years ago*** to a New York investment group.”

Transaction.Transfer-Ownership (sold) TIME-WITHIN “two years ago”  
Part-Whole.Subsidiary (it, unit) TIME-ENDING “two years ago”  
Part-Whole.Subsidiary (it, a New York investment group) TIME-  
STARTING “two years ago”

## Appendix: Relation Extent Residue

The following examples were removed from the guidelines proper due to the way in which the timestamping guidelines intersect the definition of markable extents of ACE relations. These examples fall into two classes: (I) cases where the relation extent is clear, but has the unfortunate effect of excluding the timestamp and (II) cases where the relation extent is itself controversial, and also has the effect of excluding a timestamp. We may wish to revisit both these cases in 2006.

### I. Excluded Timestamps

These examples contain “verbs of scheduling” etc. (see section 3.1.1). However, the relation extent is a noun phrase, an argument of the temporal verb (“goes back to” “takes effect on” “began” “lasted”). Because the relation extent does not encompass the verb and its associated time expression, the timestamping of the relation cannot go through.

“*Their relationship* [goes back to] **1997.**”

“*His contract with the university* [takes effect on] **January 1.**”

“**The year** [began] with *the appointment of the most pro-reform, pro-Western government to date.*”

“*His employment with IBM* [lasted] **three years.**”

### II. Controversial Relation Extents

This class of examples involves predicate nominals of the form “NP (to be) NP PP”, and in particular, the attachment of that final PP: “NP [(to be) NP PP]” vs. “NP (to be) [NP PP]”. Thus, it is actually the extent of the Entity that is at issue here, but this in turn affects the extent of the relation. This is the case for the Possessive, Preposition, and PreMod Syntactic classes of relations. Technically, the temporal modifiers in many of these cases could be considered a syntactic dependent of the copula, not the NP corresponding to the relation extent. We can tell this is true because the temporal modifier can be in initial or final position.

“He was *Microsoft’s chief scientist* [until] **1990.**”

“[Until] **1990** he was *Microsoft’s chief scientist.*”

“David was *president of Tyco* [from] **1991** [to] **1995.**”

“[From] **1991** [to] **1995** David was *president of Tyco.*”

“He was *the American envoy* [in] **the 1960s.**”

“[In] **the 1960s** he was *the American envoy.*”

In some cases, where the larger context warrants it, the annotator creating the Entity extents may choose to include the sentence-final PP (or PPs, in the case of the *from...to* example) as part of the NP. There is also a rule a thumb that says if the annotator isn’t sure, they should use the closest attachment, in which case the final PP(s) would again be part of the NP. However, if the Entity does not include the final PP, then the relation

extent won't either, and thus the timestamping will not go through. In all of the above cases where the temporal PP is sentence initial, there is no condition under which the timestamping will go through, because it will not be included within the extent of the relation.