Annotation Guidelines for Open Domain Events
Version 1.0

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1   Introduction

This supplementary material provides our guidelines for annotating events. Our event annotation is based on eventualities (Bach, 1986) and event nuggets (Mitamura et al., 2015). In this annotation, we focus on event spans and ignore other attributes such as event types and realis. We first introduce the following notations to clarify event annotation:

- **Boldface** means that marked word or phrase is highlighted as eventive;
- *Italic face* means that marked word or phrase is highlighted as non-eventive;
- An <u>underline</u> means that marked words are grouped together as a single unit.

2   Principles of Event Annotation

We approach annotation of events from two perspectives: semantic distinction (Section 2.1) and textual units (Section 2.2).

2.1   Semantic Distinction: Eventualities

Our definition of events is based on eventualities, which are a broader notion of events and consist of actions, processes, and states. More specifically, events are verbs, nouns, adjectives and phrases that refer to:

1. actions that involve a change of state with an explicit goal or completion, e.g., **walked** to Boston, **buy** a book;
2. processes that involve a change of state without an explicit goal or completion, e.g., it was **raining** yesterday; and
3. states that remain unchanged until their change or are brought as a result of an event, e.g., He **owns** a car. Tom was **happy** when he **received** a present. ("happy" is a state implying that Tom's reception of the present made him happy; see Section 6 about annotating adjectives; "received" is an action).

Note that we introduce the notion of eventualities in order to clarify the semantic boundary between eventives and non-eventives, not because we are interested in differentiating the three classes above. Annotating states is generally more difficult than annotating actions and processes because states are often confused with attributes which are not eventive. Our basic policy is that we annotate states if they imply actual occurrences. For more details, see Section 4, Section 5, Section 6 and Section 7.

2.2   Textual Units: Event Nuggets

We also define what textual units are annotated as events. For this purpose, we use the notion of event nugget, which is defined as a semantically meaningful unit that expresses an event. An event nugget can be either a single word (verb, noun, or adjective) or a phrase which is continuous or discontinuous, depending on how we interpret the semantic meaningfulness of an event that the event nugget refers to. Below are examples of event nuggets:

- He **shot** the teller in the bank.
- He **<u>opened fire</u>** at the teller in the bank.
- He **<u>turned</u>** the television **<u>on</u>**.

In the first example, "shot" is the only verb representing an event, and we annotate "shot" as a single-word event nugget. On the other hand, we annotate "open fire" as a continuous multi-word event nugget in the second example because the phrase "open fire" is a more semantically adequate unit to express the corresponding event than either "opened" or "fire." Similarly, we annotate "turned ... on" as a discontinuous multi-word event nugget in the third example.

3 General Rules

In the subsequent sections, we guide how to annotate or not to annotate verbs, nouns, adjectives, and adverbs. This section describes general rules for expressions besides the four syntactic types.

(1) Do not annotate articles (e.g., a, an, the).
- The company **filed** a **lawsuit**. (Only annotate "file ... lawsuit" as a discontinuous event nugget; do not include "a" before "lawsuit")
- After the **shooting**, many people ... (Don't annotate "the" before "shooting")

(2) Do not annotate prepositions that may look like verbs but implies no actions (e.g., including, like).
- Six people were **killed** in the riot, *including* a policeman. (Don't annotate "including" because it is a preposition, not a verb, which is semantically similar to "such as")
- She's **wearing** a dress *like* mine. (Don't annotate "like" it is a preposition meaning "similar to," which implies no actions)

(3) Do not annotate words indicating negation (e.g., not, never, no, neither).
- Tom did *not* **eat** lunch yesterday.
- *No* pilots could **see** each other.
- The ship *never* **returned**.
- She *never* **mishandled** the equipment. (Annotate "mishandled" even though 'mis-' is a prefix indicating negation)

(4) Hyphenation
When multiple words are connected by one or more hyphens to indicate a particular meaning, we annotate the entire part of connected words as a single event.
- There is a **man-made** river in the country.
- It is an **often-cited** project.
- **Well-known** researchers **gave** a **speech** at the **conference**. ("gave ... speech" is a single event nugget; see the description about annotating light verbs in Section 4)

4 Annotating Eventive Verbs

This section provides guidelines about how to annotate eventive verbs and what verbs not to annotate. We first describe how to annotate eventive verbs. We consider most verbs as events. It is generally straightforward to annotate normal verbs (verbs expressing physical actions, e.g., walk, run, eat, shoot), but there are sometimes difficulties determining the eventiveness of some types of verbs. We enumerate such types of verbs and describe whether they are annotated or not, giving some examples. We also describe how to annotate verbal phrases (e.g., look for, carry out, etc). In order to decide a verbal phrase, we suggest examining contexts and looking up a dictionary such as WordNet, Oxford or Wiktionary. In addition, we explain the difference between verbal phrases we annotate and the ones we don't.

(1) Psychological or cognitive verbs are verbs concerned with mental cognition. Examples are: see, know, hear, feel, find, believe, think, estimate, decide, consider, understand, misunderstand, acknowledge, perceive, expect, etc. We annotate all psychological/cognitive verbs.
- I **believe** it is true.
- I **found** it interesting.
- It is now **known** that they were bullies.
- They **figured out** the problem. (Annotate "figured out" together as a single event nugget because it is a phrasal verb meaning "understood")

(2) Aspectual verbs are verbs specifying aspects, i.e., temporal properties of actions. Examples are: begin, stop, start, continue, finish, last, remain, etc. We annotate all aspectual verbs.

- It **remained** an independent country for ten years.
- The ice has **begun** to **melt**. ("begun" is an aspectual verb that we annotate; "melt" is also an event)

(3) Causative verbs are verbs indicating that someone or something makes something happen. Examples are: cause, make, let, lead, help, result, have, end up, force, prevent, etc.
- He **forced** me to **cancel** the **flight**. ("forced" is a causative verb denoting an event; "cancel" and "flight" are two independent events)
- A large **earthquake** can **cause** a **tsunami**. ("cause" is a causative verb)
- The poor **weather** may have **accounted for** the small crowd. (Annotate "accounted for" together as a single event nugget because it is a phrasal verb meaning "explain")
- She **made** me **happy**. (Annotate "made ... happy" together as a single nugget because it is a semantically meaningful unit)

(4) Performance verbs are verbs meaning to do or not to do something. Examples are: perform, carry out, conduct, do, fail, etc.
- He **conducted** three experiments.
- She **failed** to **come back** by 7 o'clock. ("failed" is a performance verb, and note that "come back" is a phrasal verb referring to another event)
- We had to **solve** the problem. So we **did it**. (Annotate "did it" together as a single unit because it is a semantically meaningful unit referring to "solving the problem")

(5) Bridging or supporting verbs are verbs that come before main verbs and provide additional meanings for the main verbs. These verbs and their subsequent verbs showing full semantic contents are annotated separately as event nuggets. Examples are: try, help, allow, enable, etc.
- He **tried** to **persuade** his parents. ("tried" indicates that he puts his effort when he was persuading his parents)
- His **support helped** me (to) **complete** the project. ("helped" indicates that his support led to the completion of the project)

(6) Communication verbs are verbs that express some kind of communication between entities. Examples are: say, describe, call, name, tell, speak, etc.
- We **call** our dog Jack.
- He was **named** after his father.
- It is **reported** that ...

(7) Light verbs are verbs that carry little semantic content of their own and form a predicate with some additional expression, which is usually a noun. Common verbs that can function as light verbs are: do, give, have, make, take, etc. We group a light verb with subsequent expressions that provide full semantic contents and annotate an entire expression as a single unit.
- She **had a smoke**. ("had a smoke" is a light verb construction; we remove "a" from annotation)
- Who will **give you a hug**?
- Only the business **made a profit**.
- I **got blisters** on my right leg.
- He **won a victory** over them.
- Before **making an important decision**, he **took a shower**. ("took a shower" and "make a decision" are light verb constructions; we remove "important" from the latter because it is a mere specifier for "decision"; see Section 6 about annotating adjectives)

(8) Phrasal verbs are verbs that made up a main verb together with another element such as an adverb, a preposition, or both. As described at the beginning of this section, we suggest examining contexts and looking up a dictionary in order to determine a verbal phrase.
- She has always **looked down on** me.
- Our party **speaks for** the poor in the country.
- He **spoke of** you with high praise and warm affection.
- I **spoke** with him. (Annotate "spoke" only because "with him" forms a prepositional phrase)
- I **looked over** the writing assignment. (Annotate "looked over" as a single event nugget because it is a phrasal verb)

- I **looked** over my shoulder. (Don't annotate "looked over" but "looked" only; "over my shoulder" is a prepositional phrase)
- I **looked at** him.
- I **looked into** his eyes.
- The class **consists of** 25 students.
- The class **consists in** a hands-on introduction to linear algebra.
- People could be **put in jail** in Denmark for burning the Koran.
- My mother **cried** when my grandpa **kicked** the **bucket**. (Annotate "kicked ... bucket" because "kick the bucket" is an idiomatic verbal phrase meaning "die")
- My mother was **wishing** my grandpa to **die** a good **death**. (Annotate "die ... death" because "die a death" is an idiomatic verbal phrase meaning "die")
- You can **catch up with** the class and should never **give up**.

In addition to the dictionary-lookup strategy described above, we suggest two linguistic tests to decide whether a posed expression is a phrasal verb: (1) the movement test and (2) the conjoining test. The movement test is to move a prepositional phrase into the front of a sentence. If the sentence still makes sense, the expression is a prepositional phrase.

- *Over the writing assignment, I looked. (We cannot say this; "looked over" is a phrasal verb)
- Over my shoulder, I **looked**. (We can say this; "over my shoulder" is a prepositional phrase; "looked over" is not a phrasal verb)

The conjoining test is to conjoin two sentences. If the sentence still makes sense, the two expressions are prepositional phrases.

- *I looked over the writing assignment and my shoulder. (We cannot say this because the first one is a phrasal verb, the second one is a prepositional phrase, and their meanings are different)
- *The class consists of 25 students and in a hands-on introduction to linear algebra. (We cannot say this; "consists of" and "consists in" are phrasal verbs; we cannot separate "consists" and "in" as above)
- I **looked at** him and **into** his eyes. (We can say this; "looked at" and "looked into" are phrasal verbs with similar meanings; annotate "looked at" as a single event nugget and then annotate "looked ... into" as another single (discontinuous) event nugget)

Note that the above sentences "I looked at him" and "I looked into his eyes" fail to pass the movement test, because we cannot say "At him, I looked" or "Into his eyes, I looked." Therefore, they are phrasal verbs. However, unlike the "look over" case, the phrasal verbs "look(ed) at" and "look(ed) into" can pass the conjoining test.

(9) Stative verbs are verbs that express a state rather than an action. Stative verbs include copular verbs, which are verbs that connect an adjective or a noun complement to a subject (e.g., become, get, smell, etc.). One caveat is that we do not annotate copular verbs that indicate mental recognition and have a meaning close to a be-verb (e.g., seem, look, appear). We do not annotate stative verbs that merely refer to attributes of someone or something, playing the almost same role as a be-verb. See the end of this section for these non-eventive cases. Examples of eventive stative verbs are: have, own, hold, need, require, lack, want, love, hate, become, etc. We annotate stative verbs that imply some actions in the past or occurring continuously based on contexts.

- Everybody **liked** her. (Annotate "liked" because it implies the actual occurrence that everybody found her attractive)
- He **lives** in Chicago for most of his life. (Annotate "lives" because it implies numerous things have occurred around him during his residency in Chicago)
- The United States **have** 50 states. (Annotate "have" because it means the possession of the U.S. and implies the action that the U.S. acquired and established 50 states in the past)
- She *has* a good personality. (Don't annotate "has" because it essentially means that she is a good person, which is her attribute)
- He **got sick** yesterday.
- The tomato has **become rotten**.

- She **became** a writer. ("became" is a copular verb but more like an independent main verb that involves a change of her professional status; annotate "became" without grouping it with "writer")
- The milk **turned sour**.
- The stew **smells good**.
- The night **grew dark**.

(10) Occurrence verbs are verbs that express an occurrence of events. Examples are: happen, occur, take place, etc. We annotate an occurrence verb as a single event nugget.
- The **bombing occurred** last Wednesday. (Annotate "occurred" because it is an occurrence verb)
- The **seminar** will **take place** at 4pm. (Annotate "take place" because it is an occurrence verb)

Next, we describe what verbs we do not annotate. Below is a list of types of verbs that we do not annotate:
- auxiliary/modal verbs (e.g., will, can, may, shall, would, could, might, should)
- auxiliary verbs (e.g., have, has, had)
- be-verbs (e.g., am, are, is, was, were, been)
- copular verbs that indicate mental recognition and have a meaning close to a be-verb (e.g., seem, look, appear)
- verbs that play a semantically equivalent role as be-verbs (e.g., mean, equal)

We give several examples of these non-eventive verbs below. For clarification, we also include examples of eventive verbs to compare them with the non-eventive ones.
- John *will be* **coming** soon. ("will" is a modal verb; "be" is a be-verb; annotate "coming" only)
- Mary *has* **married** with Tom. ("has" is an auxiliary verb; annotate "married" only)
- He *might have been* **injured**.
- It *seems* that he **won** the game. ("seems" is a copular verb that indicates mental recognition.)
- She *looks* like a very happy woman.
- He *looked* **tired** after the work. (Don't annotate "looked" because it is a copular verb that indicates mental recognition; annotate "tired" because the adjective implies the action that the work made him tired; see Section 6 about annotating adjectives for details)
- She *has* a good personality. (Don't annotate "has" because it essentially means that she is a good person, which is her attribute)
- The word caldera *comes* from the Portuguese language, meaning "cauldron." (Don't annotate "comes" and "meaning" because they play the almost same role as a be-verb)
- 'Enormous' *means* 'very big' (Don't annotate "means" because it plays the almost same role as a be-verb, implying no actions)
- Do you know what I **mean**? (Annotate "mean" because it indicates the action "intend to say" and is more like a communication verb)
- Three times two *equals* six. (Don't annotate "equals" because it plays the almost same role as a be-verb, implying no actions)

5 Annotating Eventive Nouns

This section provides guidelines about how to annotate eventive nouns and what nouns not to annotate. We annotate nouns when they refer to events. There are some nouns which we should pay special attention to. We explain those nouns in detail as well.

(1) Noun phrases

We consider a noun phrase as a single unit and decide whether the noun phrase refers to an event. As with verb phrases, we suggest examining contexts and looking up a collocation dictionary such as Oxford, WordNet or Wikipedia in order to check the strength of collocation and determine a noun phrase.
- The news **describes** the **shipping accident**. (Annotate the entire phrase "shipping accident" as a single event nugget because it forms a noun phrase referring to an event)
- Community members **provided** information about the general **cleanup process**.
- He has **recovered** from a **heart attack**. (Annotate the entire phrase "heart attack" because the

collocation is strong)

- The guerrilla **used** 70 *assault rifles*. ("assault rifles" is a single noun phrase referring to a non-eventive object; "assault" can be the action of attacking someone, but it implies no actions in this context)
- Thousands of *flood victims* were evacuated. ("flood victims" is a single noun phrase referring to people affected by flood; "flood" can be an event, but it implies no actions in this context)
- The *Indian Removal Act* was **signed** into law in 1830. ("Indian Removal Act" is a single noun phrase referring to a law; "removal" can be an event, but it does not imply any actual actions in this context)
- We **faced** massive **oil spill**. ("oil spill" is considered as a single noun phrase because the collocation is strong; "massive" is an adjective which is a mere specifier for "oil spill"; see details for Section 6 about annotating adjectives)
- We **saw** a **laughing** child. ("laughing" is an adjective modifying "child" and originated from verb "laugh"; it implies the action of laughing; see the section of annotating adjectives)

(2) Proper nouns

We annotate a proper noun as a single event nugget if it refers to an event. Wikipedia is often helpful to determine whether a particular proper noun is an event or not. Some proper nouns appear as metonyms, which are substitutes for other proper nouns. We also annotate such proper nouns if they refer to an event.

- Property damage by **Hurricane Katrina** was around $108 billion.
- Exactly ten years after **Katrina**, ... (Annotate "Katrina" because in this case it is a metonym referring to "Hurricane Katrina," which is eventive)
- *New Delhi* **announced** today that ... (Don't annotate "New Delhi" because it is a metonym referring to the government of India which is not eventive)

(3) Pronouns or anaphors

We annotate both pronouns and anaphors if they refer to events.

- **It** was **one** of the first **well-known massacres** at school in the United States ... ("It" is a pronoun referring to "Columbine High School Massacre" in a previous context, which is eventive; "one" is the same as "it")
- **This** is ... ("This" is an anaphor, and we annotate it if it corefers to an event)
- The **Boston Tea Party** was **one** of the main **things** that **started** the **American Revolutionary War**.

(4) Empty nouns

When noun phrases consist of empty nouns (e.g., act, action, activity, affair, event, incident, etc.) and taggable modifying nouns, we annotate the entire phrase as one event nugget.

- As an **act of protest** against the Chinese government, ...
- Two **incidents of sexual harassment** have been found.
- This **state of affairs** cannot be **ignored**.

(5) Preposition + noun

If a prepositional phrase indicates a state implying actions, we annotate the entire phrase as an event nugget.

- The people were **in pain**.
- All we **need** is a car, we'll **stay in business**. ("in business" is the original preposition-noun phrase, and "stay in business" is an idiomatic expression)
- The diabetes drugs are currently **under development**.

(6) Nouns that describe states

Some nouns describe states. Some nominal states can imply actions, but others can refer to attributes. For details of the distinction between these two, see the section about annotating adjectives.

- When she **won**, her eyes **shone** with **happiness**. (Annotate "happiness" because it implies the action that her victory made her happy)
- Their grandchildren are a constant source of *happiness*. (Don't annotate "happiness" because it

refers to an attribute of some people who have grandchildren)

- Heavy **snow** has **caused chaos** on the highways. (Annotate "chaos" because it implies the confusion of people and cars)

(7) Nouns that are difficult to define as events

Some nouns are ambiguous in terms of eventiveness, and other nouns are simply difficult to decide eventiveness. The former case (ambiguous nouns) include some verb nominalizations (e.g., "payment" in the example below). When we encounter those nouns, we should make a decision considering the context where they are used. If they sound eventive and/or make a semantically meaningful unit with other mentions, we annotate them as event nuggets.

- The report **calls for** a ban on the **import** of illegal drugs. (Annotate "import" because it refers to the action of bringing the drugs)
- Every year lots of *imports* are **brought** from abroad. (Don't annotate "imports" because they refer to objects that brought into a country from abroad)
- I **want** to **report** the **loss** of a package. (Annotate "loss" because it refers to the action of losing the package)
- The *loss* was more than a half of the company's revenue. (Don't annotate "loss" because it refers to the amount of lost money, which is compared to the revenue, rather than the action of losing)
- His **payment** was late. (Annotate "payment" because it refers to the action of his paying something)
- His *payment* was $10. (Don't annotate "payment" because it refers to a specific amount of money paid by him, which is not eventive)
- The report **criticized** the department's **waste** of resources. (Annotate "waste" because it refers to the action of wasting resources)
- We need to **discard** the toxic *wastes*. (Don't annotate "waste" because it refers to some materials that are thrown away)
- **Force** equals mass times acceleration. (This is a difficult case; annotators use their own discretion to examine contexts and decide whether "force" refers to an event)

6 Annotating Eventive Adjectives

This section provides guidelines about how to annotate eventive adjectives and what adjectives not to annotate. We follow the definition of eventive adjectives by Palmer et al. (2016). They define eventive adjectives as follows. An attribute (adjective) is an event when its use implies actual occurrences — such as the events leading up to its own existence. Adjectives used as mere specifiers should therefore be viewed with skepticism in this regard. "I came home and saw the door was open" evokes an act of someone opening it; "He walked through the open door" does not. They give the examples below, suggesting a continuous range from eventives to non-eventives:

- The walls **yellowed** during the fire. ("yellowed" is very eventive)
- We **came home** to find the door **opened**. ("opened" is eventive)
- We **came home** to find the door **open**. ("open" is somewhat eventive)
- I **own** a *yellow* canary. ("yellow" is very non-eventive)

Among the examples above, the first two examples (i.e., "yellowed" and "opened") can be recognized as events very easily because they are participles originated from verbs. However, the word "open" in the third example is more difficult to determine. As mentioned above, the "open" is an event because it implies that it occurred after somebody opened the door. In the fourth example, "yellow" is not considered as an event because it is an attribute of the canary and does not evoke any act of making a canary yellow.

The following sentences include eventive adjectives, which should be annotated.

- Tom was **happy** when he **received** a birthday present. ("happy" implies that Tom's reception of the present made Tom happy)
- She was **talkative** at the **party**. ("talkative" implies that she talked a lot at the party)
- He is **blind** to Mary's faults. ("blind" implies that he does not recognize Mary's faults)

- It was quite **unbelievable** that he **won** the game. ("unbelievable" implies the action that people cannot believe that he won the game)
- The bear was **dangerous** and **violent** when he **saw** us. ("dangerous" and "violent" implies that we made the bear upset)
- She was **cradling** a **crying** baby. ("crying" is an adjective implying the action, originated from verb "cry")
- She <u>**made**</u> a <u>**dismissive reply**</u> to his email.
- **It** was the largest **known** <u>**explosive eruption**</u> within the last 25 million years.

In the examples above, special attention needs to be paid to the last two. In the second to the last, we annotate "made ... dismissive reply" as a single event and do not annotate "made ... reply" and "dismissive" separately. This is because "dismissive" represents a manner of the action "reply," and is originated from verb "dismiss" meaning the action of putting little importance on something, i.e., its own event semantics distinct from the action of "reply." Therefore, when an adjective represents a manner of an eventive noun and implies an independent action (often originated from a verb), we annotate the adjective and noun together as a single event nugget. The annotation of "made ... dismissive reply" is contrastive to "made a quick reply" where we annotate "made ... reply" only, because "quick" is a mere specifier for "reply" and does not imply any occurrences by itself.

Compared with the above examples, the sentences below do not contain any eventive adjectives. Those adjectives only describe attributes of entities rather than implying actions. Therefore, we do not annotate them.

- Tom is a *happy* man. (Don't annotate "happy" because it indicates Tom's attribute)
- Bears can be *dangerous* and *violent* when they see people. ("dangerous" and "violent" express properties of bears with a condition, rather than underlying actions)
- <u>**Stay away**</u> from the volcano because it is *dangerous*. ("dangerous" is not eventive because it depicts the volcano, implying no actual occurrences)
- One of his parents was *blind*. ("blind" is a personal attribute of the parent, implying no actions)
- John **bought** an *expensive* book. (Don't annotate "expensive" because it is a mere specifier for "book" without implying any actions)
- He was the *tallest* in his class.attribute, implying no actions)
- She is a *talkative* person.
- The *rapid* and *massive* **industrialization started** by Stalin ... ("rapid" and "massive" are mere specifiers, implying no actual occurrences)
- They were **waiting** in a *long* line for a <u>**flu shot**</u>.
- ... the **collapse** of land surface after a *gigantic volcanic* **eruption**.

There is an additional note about the construction of "the + adjective." The phrase of "the + adjective" means some people with the state expressed by the adjective. We annotate the phrase when it implies events.

- After the **bombing**, the security guard **found** the **dead** and **injured**. (Annotate both "dead" and "injured" because the dead and injured people imply that they died and got injured due to the bombing)
- We **saw** the *poor* near the station. (Don't annotate "poor" because in this case "poor" is a mere specifier and does not imply any actual occurrences)

7 Annotating Eventive Adverbs

This section provides guidelines about how to annotate eventive adverbs and what adverbs not to annotate. As described in Section 6, eventive adjectives imply actual occurrences whereas non-eventive adjectives do not, ending up with mere specifiers. We apply the same distinction to adverbs. By definition, an adverb modifies a verb, describing a manner of a verb, that is, how actions are done. We annotate adverbs and verbs together as single events (semantically meaning units), if the adverbs imply actual occurrences.

- She <u>**replied**</u> to his email **dismissively**. (Annotate "replied ... dismissively" as a single event because

"dismissively" indicates a manner of the action "replied" and is originated from verb "dismiss" meaning the action of putting little importance on something, i.e., its own event semantics distinct from the action of "replied")

- He <u>**kicked**</u> me **intentionally**.
- He <u>**kicked**</u> me **unintentionally**.
- She <u>**looked at**</u> her **doubtfully**.
- She <u>**looked at**</u> her **undoubtedly**.
- He <u>**closed**</u> the door **angrily** when he was **speaking** with her over the phone. (Annotate "closed ... angrily" is a single event; "angrily" is an adverb implying the action that he got angry due to his phone conversation with her)

On the other hand, we do not annotate adverbs that do not imply any actions and are used as mere specifiers. Such non-eventive adverbs include but are not limited to:

- Adverbs representing times (e.g., early, recently, lately)
- Adverbs representing locations (e.g., somewhere, anywhere)
- Adverbs representing degrees and/or frequencies (e.g., rarely, often, sometimes)
- Adverbs coming at the beginning of a sentence and modify the entire sentence (e.g., luckily, unfortunately, certainly)

Below are examples of non-eventive adverbs:

- Mary *often* **gets up** *early*.
- He **walked** very *slowly*.
- *Actually*, John **did it** on time. ("Actually" modifies the entire sentence without implying any actions; we assume "it" refers to an event)
- *Sadly*, he **opened** the door.
- He *angrily* **closed** the door. (Don't annotate "angrily" if it is unclear whether the adverb implies an actual occurrence from this narrow context)
- He *quietly* **opened** the door.
- The baby **slept** *peacefully*.
- Mary **dressed** *elegantly*.
- Bill **solved** the problem *intelligently*.

References

Emmon Bach. 1986. The algebra of events. *Linguistics and Philosophy*, 9:5–16.

Teruko Mitamura, Yukari Yamakawa, Susan Holm, Zhiyi Song, Ann Bies, Seth Kulick, and Stephanie Strassel. 2015. Event nugget annotation: Processes and issues. In *Proceedings of NAACL-HLT 2015 Workshop on Events: Definition, Detection, Coreference, and Representation*, pages 66–76.

Martha Palmer, Will Styler, Kevin Crooks, and Tim O'Gorman, 2016. *Richer Event Description (RED) Annotation Guidelines*. University of Colorado at Boulder. Version 1.7, `https://github.com/timjogorman/ RicherEventDescription/blob/master/guidelines.md`.