ACE (Automatic Content Extraction) English Annotation Guidelines for Relations

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Linguistic Data Consortium

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1 Introduction

The goal of the Relation task is to detect and characterize Relations of the targeted Types between entities. Relations are ordered pairs of entities. This means that the order of the arguments is important in the identification of Relations. To capture this idea, two different Argument slots (arg1 and arg2) are provided for each Relation. For example, in the sentence

> *George Bush traveled to France on Thursday for a summit.*

There is a Physical.Located Relation between *George Bush* and *France*. In Physical.Located Relations, the Person that is located somewhere will always be assigned to arg1 and the place that the Person is located will always be assigned to arg2.

Types and Subtypes will be assigned to every Relation. For each Type, there is a set of possible Subtypes. Types and Subtypes are intended to categorize the Relations on the basis of their meaning. In the example above, the Type of the Relation is Physical and the Subtype is Located. For a complete description of the types and subtypes we will identify, please see Section 3 below.

We will tag the Syntactic Extent for every Relation identified and characterize the Relation by assigning one of the eight Syntactic Class types. The Syntactic Extent of the example above is the entire sentence. The Syntactic Class is Verbal. For a complete discussion of the rules for identifying Syntactic Classes and Relation Extents please see Section 2.3 below.

We will assign a Modality and Tense attribute to each Relation identified. For a complete discussion of the rules for identifying Modality and Tense, please see Section 2.2 below.

The complete annotation for the example above is represented below.

Class	Type	Argument1	Argument2
Verbal Asserted Past	*PHYS.Located*	**George Bush**	**France**

2 Taggability

2.1. Preliminary Definitions

Unlike Entities and Events, Relations have no actual anchor in the text. We will limit Relations to only those that are expressed within a single sentence.

Tagging for Meaning

We will only tag Relations between entity mentions when the relationship is explicitly referenced in the sentence that contains the two mentions. Even if

there is a relationship between two entities in the real world (or elsewhere in the document), there must be evidence for that relationship in the local context where it is tagged. For example:

> *He and his brother worked for Comcast.*

In the above sentence, there is explicit evidence of a familial relationship between *his* and *brother*.

> *Frank and James worked for Comcast.*

Even if we know that *Frank* and *James* are brothers from elsewhere in the document, we will not tag a familial relation between them in these situations.

Reasonable Reader Rule

We will only annotate those Relations for which there is no reasonable interpretation of the sentence in which the Relation does not hold.

To understand the application of the reasonable reader rule, we must also consider Relation Modality. A complete definition of Relation Modality is provided in Section 2.1.1 below.

Tag for Explicit Meaning

We operate according to a "tag for explicit meaning" guideline. Even if there is a relationship between two entities in the real world (or elsewhere in the document), there must be explicit evidence for that relationship **in the sentence** for that relation to be taggable.

So, there is no taggable PER.SOC.Family relationship in the phrase "*a woman* who demanded hush money from *a popular entertainer,*" despite the fact that it is later revealed that the woman is allegedly the entertainer's daughter. This is a common source of error.

Relation Chains and Entities as 'Blocking Categories'

Promotion through taggable Entities is illegal. If a potential Relation satisfies the Reasonable Reader Rule and is expressed in a single sentence, but one of the Entity Mention arguments is embedded in some other (Simple) Entity Mention, that Entity Mention is not accessible, and the potential Relation is not taggable.

For example, in the sentence:

> *Smith went to a hotel in Brazil*

(*Smith*, *hotel*) is a taggable PHYS.Located Relation but (*Smith*, *Brazil*) is not, because to get the second relationship, one would have to "promote" *Brazil*

through the Entity mention of hotel, which includes Brazil in the extent : [a _hotel_ in Brazil].
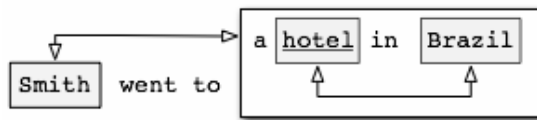
On the other hand, in:

> _Smith went to a conference in Brazil_

(_Smith_, _Brazil_) is a taggable PHYS.Located Relation, since it is acceptable to promote through a non-taggable entity (_conference_).
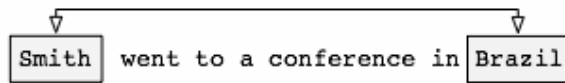
This principle holds even for "long distance" constructions. For instance, in

> _While searching a headquarters building in Shatra, the Marines developed..._

(_the Marines_, _building_) is taggable, but not (_the Marines_, _Shatra_).
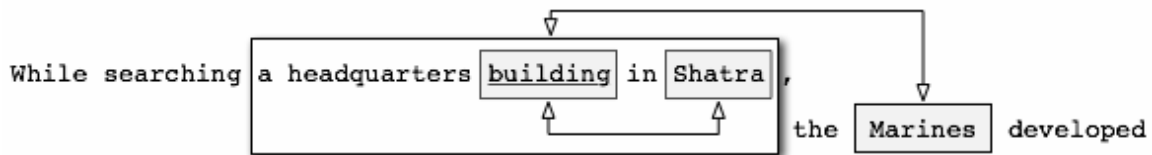
Likewise in:

> _They attacked the historic Red Fort in the Indian capital of New Delhi on Saturday killing three people_

(Red Fort, people) is taggable, but not (capital, people).
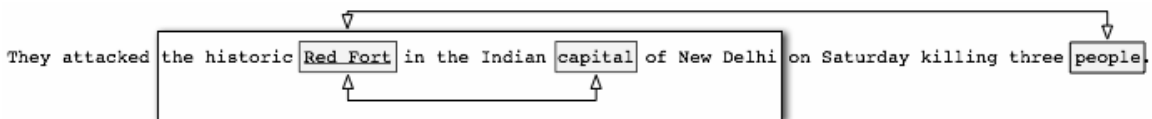
Similarly, in _US Secretary of State_, we will tag (_US_, _Secretary_) and (_Secretary_, _State_) but not (_US_, _State_).

Note that relationships can distribute over conjunctions. So in:

… banks in Boston and New York …

There are two Relations: (*banks*, *Boston*) and (*banks*, *New York*).
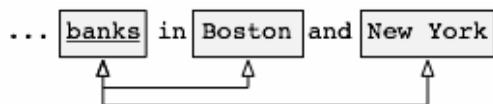
When the second half of a partitive-style construction is modified (e.g. *one of the top suppliers of Chicago gangs*), we will tag the relationship between the modifier and both halves of the partitive (e.g. (one, gangs) and (suppliers, gangs)).

2.2. Modality and Tense

2.1.1 Modality

The two Modality attributes are *ASSERTED* and *OTHER*. If we think of the situations described by sentences as pertaining to possible descriptions of the world (or as 'possible worlds') then we can think of *ASSERTED* Relations as pertaining to situations in 'the real world', and we can think of *OTHER* Relations as pertaining to situations in 'some other world defined by counterfactual constraints elsewhere in the context'.

For example, in the sentence:

> *We are afraid Al-Qaeda terrorists will be in Baghdad.*

The presence of Al-Qaeda terrorists in Baghdad is a situation being described as holding in the counterfactual world defined by 'our' fears. And in:

> *If the inspectors can get plane tickets today, then they will be in Baghdad on Tuesday*

The inspectors (*they*) are in Baghdad only in the worlds where they get plane tickets today.

The Modality attribute of Relations will be defined as:

> *Asserted* --- when the Reasonable Reader Rule is interpreted relative to the 'Real' world;

> *Other* --- when the Reasonable Reader Rule is taken to hold in a particular counterfactual world.

Negatively defined Relations (e.g. "John is not in the house") will not be annotated.

When the entities constituting the arguments of a Relation are hypothetical, then the Relation can still be understood as *Asserted*. But if the Relation itself is hypothetical, then it is annotated as *Other*. For example:

> *We are afraid Al-Qaeda terrorists will be in Baghdad.*

gives two Relations. The ORG-Aff.Membership Relation between *terrorists* and *Al-Qaeda* will be annotated as *Asserted*. The Physical.Located Relation between *terrorists* and *Baghdad* will be annotated as *Other.*

2.1.2 Tense

TENSE will be defined relative to the time of speech.

The potential values for this attribute will be defined as follows:

> *Past* --- the Relation is taken to hold only for some span prior to the time of speech;

> *Future* --- the Relation is taken to hold only for some span after the time of speech;

> *Present* --- the Relation is taken to hold for a limited time overlapping with the time of speech;

> *Unspecified* --- the Relation is 'static' or the span of time for which it holds cannot be determined with certainty;

> TENSE will only be taggable for Relations when evidence for it can be found within the extent of the Relation mention. For the majority of Relation mentions with NP extent, this will mean that their TENSE is 'Unspecified.'

Note: Many of the Relations we will annotate will be expressed by noun phrases. Most of the time it will be difficult to determine the TENSE of the Relation expressed. For all such cases, we will use the value *Unspecified*. Some notable exceptions might be:

> *The president-elect of the US*   (*Future*)

In this phrase, it is asserted that the entity designated by 'president-elect' will be in an employment relation with US in the future. A fully annotated version of this example is given in section 2.3.2 below.

> *The former US President*   (*Past*)

Formulaic Relations

"Wolf Blitzer, CNN, Baghdad."

  will be annotated with TENSE="Present" by fiat.

  R1: "Wolf Blitzer" "CNN"   (ORG-Aff.Employment Asserted Present)
  R2: "Wolf Blitzer" "Baghdad" (PHYS.Located Asserted Present)

2.3. Relation Extent and Syntactic Classes

It is important to note that the accurate identification of the Syntactic Class and the Relation Extent for each Relation will have significant effects on other decisions, such as taggability and timestamp accessibility. Our goal is to tag the smallest or closest possible relation. For example, in 'he and his wife', we would choose 'his wife' as the extent for the Familial relationship as they are the most closely associated.

Note: For the ACE Relations task, Syntactic Class is used synonymously with LEXICALCONDITION. The latter is the official property name in APF format, the former a more descriptive nomenclature intended to make the task more accessible to annotators.

The eight Syntactic Classes are intended to provide justification for the tagging of each Relation. Recall that the Reasonable Reader Rule and the restriction of taggable Relations to those that occur within a single sentence do the majority of work in constraining Relation Taggability. The Syntactic Classes are used to provide an additional sanity check on taggabilty. .

The accessibility of Arguments to Relations will be constrained by the extent of the Relation Mention under consideration. The Relation will be justified by the Reasonable Reader Rule and the Syntactic Class and Relation Extent will be defined in such a way: that both arg1 and arg2 are included in the Relation Extent; and that the Syntactic Class felicitously describes that extent (and the syntactic connection between the two arguments).

One direct implication of this approach is that many potential Relations will satisfy the Reasonable Reader Rule but will not fit into one of the 7 explicitly defined Syntactic Classes (all but the *Other* class).   These cases should be considered more carefully than the others, and their identification as *Other* should motivate this attention.

Relation Extent is defined relative to each of the proposed Syntactic Classes.

2.3.1 Possessive

The Possessive Syntactic class is used when the Entity Mention of one argument is possessive case and the Entity Mention of the other argument is clearly the 'possessed object' in the construction.

America's Department of Defense			
Class	**Type**	**Argument 1**	**Argument 2**
Possessive Asserted Unspecified	*Part-Whole.Subsidiary*	*America's **Department of Defense***	***America***

Nathan Myhrvold, [Microsoft's chief scientist]			
Class	**Type**	**Argument 1**	**Argument 2**
Possessive Asserted Unspecified	*Org-Aff.Employment*	*Microsoft's chief **scientist***	***Microsoft***

2.3.2 Preposition

The Preposition Syntactic class is used when the one entity mention is linked to the other with a Preposition. Note: If the Prepositional Phrase containing one argument is linked to the other argument with the help of a support verb (such as 'be'), then the Syntactic Class is Verbal, not Preposition. For example, *"Apple Inc.'s headquarters are in Cupertino Valley, California"* would be Verbal Class, Part-Whole.Geo.

[Officials in California] are warning residents.			
Class	**Type**	**Argument 1**	**Argument 2**
Preposition Asserted Unspecified	*Physical.Located*	***Officials** in California*	***California***

The president-elect of the US			
Class	**Type**	**Argument 1**	**Argument 2**
Preposition Asserted Future	*Org-Aff.Employment*	*The **president-elect** of the US*	***US***

2.3.3 PreMod

The PreMod Syntactic Class is used for those Relations that are established by the construction in which a proper adjective or proper noun modifies a taggable entity.

Relations involving nominal pre-modifiers are taggable, even when the nominal pre-modifier is generic. **These are easy to miss and require special attention**.

Examples: *city officials*, *army headquarters*, *mountain regions*, *industry officials*, *union employees*.

[The American envoy] left the talks early.

Class	Type	Argument 1	Argument 2
PreMod Asserted Unspecified	Org-Aff.Employment	The American **envoy**	**American**

Palestinian leaders			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod Asserted Unspecified	Org-Aff.Employment	Palestinian **leaders**	**Palestinian**

New York police			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod Asserted Unspecified	Part-Whole.Subsidiary	New York **police**	**New York**

2.3.4 Coordination

The Coordination Syntactic Class is used for Relations that are expressed using noun phrases containing the coordinating conjunction 'and'.

he and a hunting partner			
Class	**Type**	**Argument 1**	**Argument 2**
Coordination Asserted Present	Per-Social.Lasting	He	a hunting **partner**

Exception: This construction is not preferred and should not be used in cases where there is a possessive Relation found in the close context. For example, in "*He and his wife*", we will tag only the possessive Relation "*his wife*" as that construction holds the meaningful Relation.

2.3.5 Formulaic

There are a number of constructions that are commonly used in news stories. For these standard constructions, we will use the Syntactic Class *Formulaic*. The following Formulaic Relations will be annotated

Reporter sign-off

Jane Clayson, ABC News, South Lake Tahoe.			
Class	**Type**	**Argument 1**	**Argument 2**
Formulaic Asserted Present	Physical.Located	**Jane Clayson**	**South Lake Tahoe**
Formulaic Asserted Present	Org-Aff.Employment	**Jane Clayson**	**ABC News**

Addresses

Mary Smith, Medford, Mass.			
Class	*Type*	*Argument 1*	*Argument 2*
Formulaic Asserted Unspecified	*Gen-Aff.CRRE*	**Mary Smith**	**Medford**, *Mass*

Elected officials

Senate Majority Leader Trent Lott (R-Miss.)			
Class	*Type*	*Argument 1*	*Argument 2*
Formulaic Asserted Unspecified	*Org-Aff.Membership*	*Senate Majority Leader* **Trent Lott**	**R**
Formulaic Asserted Unspecified	*Org-Aff.Employment*	*Senate Majority Leader* **Trent Lott**	**Miss**.

2.3.6 Participial

The Syntactic Class *Participial* will be used in cases where there is a taggable Relation between a head noun and a noun contained within a participial phrase that modifies it.

the crowd trapped inside the compartment			
Class	*Type*	*Argument 1*	*Argument 2*
Participial Asserted Present	*Physical.Located*	*the* **crowd** *trapped inside the compartment*	*the* **compartment**

the private-sector body based in Norwalk, Conn			
Class	*Type*	*Argument 1*	*Argument 2*
Participial Asserted Unspecified	*Gen-Aff.Loc-Origin*	*the private-sector* **body** *based in Norwalk, Conn*	**Norwalk**, *Conn*

2.3.7 Verbal

The Syntactic Class *Verbal* will be used for cases motivated by a taggable mention of a Relation between two entities where the Relation is directly expressed by a verb tying the two together into a sentence or a clause. The extent for verbal Relations will be the entire sentence.

There are two kinds of Verbal Relations:

Stative or Habitual Constructions

[Death Valley is in the Mojave Desert.]

Class	Type	Argument 1	Argument 2
Verbal Asserted Unspecified	*Part-Whole.Geo*	**Death Valley**	the **Mojave Desert**

[Credit Suisse is in a coalition of banks against money laundering.]			
Class	**Type**	**Argument 1**	**Argument 2**
Verbal Asserted Unspecified	Org-Aff.Membership	**Credit Suisse**	a **coalition** of banks against money laundering

[Coca Cola Co. is based in Atlanta.]			
Class	**Type**	**Argument 1**	**Argument 2**
Verbal Asserted Unspecified	Gen-Aff.Loc-Origin	**Coca Cola Co**	**Atlanta**

Relations Expressed by Verbs

[He had previously worked at NBC Entertainment]			
Class	**Type**	**Argument 1**	**Argument 2**
Verbal Asserted Past	*Org-Aff.Employment*	**He**	**NBC Entertainment**

[Steve Jobs briefly attended Reed College]			
Class	**Type**	**Argument 1**	**Argument 2**
Verbal Asserted Unspecified	*Org-Aff.Student-Alum*	**Steve Jobs**	**Reed College**

2.3.8 Other

The *Other* Class of Relations is reserved for those that do not strictly satisfy the syntactic requirements of one of the other classes, but still satisfies the 'beyond a reasonable doubt' standard for Relation taggability. The extent for Other Relations will be the entire sentence.

[In the West Bank, a passenger was wounded when an Israeli bus came under fire.]			
Class	**Type**	**Argument 1**	**Argument 2**
Other Asserted Past	*Physical.Located*	a **passenger**	the **West Bank**

3 Types and Subtypes

In addition to the constraints discussed above, there will be one additional constraint on the taggability of Relations. Namely, a potential Relation Mention will only be taggable in case it expresses a taggable Relation Type and Subtype.

We will tag only a limited inventory of Types and Subtypes. The following subsections define these Types and Subtypes and describe the Entity Type constraints on their possible Arguments.

In each subsection, the potential types of the arguments will be expressed as:

Permitted Relation Arguments:

Type	Argument 1	Argument 2
TYPE.SUBTYPE	*ENTITY TYPES*	*ENTITY TYPES*

This definition will be followed by a set of examples of the form:

Examples:

ARG1_TYPE-ARG2_TYPE

EXAMPLE TEXT			
Class	*Type*	*Argument 1*	*Argument 2*
SYNTACTIC CLASS *MODALITY* *TENSE*	*TYPE.SUBTYPE*	*MENTION* **HEAD**	*MENTION* **HEAD**

3.1. Physical

3.1.1 Located

The Located Relation captures the physical location of an entity. This Relation is restricted to people. In other words, arg1 in Physical.Located Relations can only be occupied by mentions of Entities of Type *Person*.

For locations of Facilities, Locations, and GPEs, use Part-Whole.Geographical instead. For locations of ORG's, use Gen-Aff.Org-Location-Origin.

We **do not** tag a PHYS.Located Relation when someone is *sentenced to prison* or *handed a jail sentence*. There is no taggable PHYS Relation in these constructions.

We **will not** tag the Relation between a passenger (or a pilot or a driver) and the vehicle that they are using as PHYS.Located. Instead we will use ART.User-Owner-Inventer-Manufacturer.

The default category for a Relation indicated by a GPE premodifier is GEN-AFF.Citizen-Resident-Religion-Ethnicity (e.g. "Chicago gangs"), not PHYS.Located. [This follows the same reasoning that dictates GPE premodifiers defaulting to role GPE.]

Permitted Relation Arguments

Type	Argument 1	Argument 2
Physical.Located	PER	FAC, LOC, GPE

Examples

PER-FAC

thousands of Palestinians rushed the Israeli checkpoint			
Class	*Type*	*Argument 1*	*Argument 2*
Verbal Asserted Past	*Physical.Located*	*thousands of **Palestinians***	*the Israeli **checkpoint***

PER-GPE

He was campaigning in his home state of Tennessee			
Class	*Type*	*Argument 1*	*Argument 2*
Verbal Asserted Past	*Physical.Located*	***He***	*his home **state** of Tennessee*

PER-GPE

in the West Bank, a passenger was wounded when an Israeli bus came under fire			
Class	*Type*	*Argument 1*	*Argument 2*
Other Asserted Past	*Physical.Located*	*a **passenger***	*the **West Bank***

3.1.2 Near

Near indicates that an entity is explicitly near another entity, but neither entity is a part of the other or located in/at the other.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Physical.Near	PER, FAC, GPE, LOC	FAC, GPE, LOC

Examples

GPE-GPE

a town some 50 miles south of Salzburg in the central Austrian Alps			
Class	**Type**	**Argument 1**	**Argument 2**
Preposition Asserted Unspecified	*Physical.Near*	*a **town** some 50 miles south of Salzburg in the central Austrian Alps*	***Salzburg***

PER-FAC

Muslim youths recently staged a half dozen rallies in front of the embassy			
Class	**Type**	**Argument 1**	**Argument 2**
Other Asserted Past	*Physical.Near*	*Muslim **youths***	*the **embassy***

3.2. Part-whole

3.2.1 Geographical

The Geographical Relation captures the location of a Facility, Location, or GPE in or at or as a part of another Facility, Location, or GPE. Geographical relationships are the sorts of things one might find in a gazetteer, on a map, or on a building plan (although this is not a requirement per se). Similarly, these are typically permanent relationships, though there are obviously exceptions (a tent might be put up in a certain location for a special event, for example).

The following will also be tagged as Part-Whole.Geographical:

- GPEs and Regions under the control of some larger GPE:
     .. the Indian controlled region …
- Areas defined by a central GPE:
     … the Atlanta area ..
     … the Los Angeles region …

- The relationship between a GPE and its border
the Israeli border

For locations of ORG's, use Gen-Aff.Org-Location-Origin.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Part-Whole.Geo	FAC, LOC, GPE	FAC, LOC, GPE

Examples

FAC-GPE

a military base in Germany

Class	Type	Argument 1	Argument 2
Preposition Asserted Unspecified	Part-Whole.Geo	a military **base** in Germany	**Germany**

FAC-FAC

St. Vartan's Cathedral, on Second Avenue			
Class	Type	Argument 1	Argument 2
Preposition Asserted Unspecified	Part-Whole.Geo	**St. Vartan's Cathedral**, on Second Avenue	**Second Avenue**

FAC-FAC

the lobby of the hotel			
Class	Type	Argument 1	Argument 2
Preposition Asserted Unspecified	Part-Whole.Geo	the **lobby** of the hotel	the **hotel**

FAC-FAC

the basketball arena at Michigan State University			
Class	Type	Argument 1	Argument 2
Preposition Asserted Unspecified	Part-Whole.Geo	the basketball **arena** at Michigan State University	**Michigan State University**

GPE-GPE

Moscow, Russia			
Class	Type	Argument 1	Argument 2
Formulaic Asserted Unspecified	Part-Whole.Geo	**Moscow**, Russia	**Russia**

LOC-GPE

the Thai border			
Class	Type	Argument 1	Argument 2
PreMod Asserted Unspecified	Part-Whole.Geo	the Thai **border**	**Thai**

LOC-LOC

the top of the mountain			
Class	Type	Argument 1	Argument 2
Preposition Asserted Unspecified	Part-Whole.Geo	the **top** of the mountain	the **mountain**

3.2.2 Subsidiary

Subsidiary captures the ownership, administrative, and other hierarchical relationships between organizations and between organizations and GPEs. This includes relationships between a company and its parent company, as well as between a department of an organization and that organization. It also includes the relationship between organizations and the GPE's government of which they are a part.

We will also tag the Relation between a GPE and the industries (ORGs) that they control as Part-Whole.Subsidiary:

> … *state-controlled banks …*

> Part-Whole.Subsidiary (*banks*, *state*)

Permitted Relation Arguments

Type	Argument 1	Argument 2
Part-Whole.Subsidiary	ORG	ORG, GPE

Examples

ORG-ORG

parent company of ABC			
Class	*Type*	*Argument 1*	*Argument 2*
Preposition Asserted Unspecified	*Part-Whole.Subsidiary*	***ABC***	*parent company of **ABC***

ORG-GPE

New York police			
Class	*Type*	*Argument 1*	*Argument 2*
PreMod Asserted Unspecified	*Part-Whole.Subsidiary*	*New York **police***	***New York***

ORG-ORG

Microsoft's accounting department			
Class	*Type*	*Argument 1*	*Argument 2*
Possessive Asserted Unspecified	*Part-Whole.Subsidiary*	*Microsoft's accounting **department***	***Microsoft***

ORG-GPE

[The Australian Parliament] decided to veto the ecology bill.			
Class	*Type*	*Argument 1*	*Argument 2*

PreMod Asserted Unspecified	Part-Whole.Subsidiary	The Australian **Parliament**	**Australian**

3.3. Personal-Social

Personal-Social relations describe the relationship between people. Both arguments must be entities of type PER.

Please note: The arguments of these Relations are not ordered. The Relations are symmetric.

3.3.1 Business

The Business Relation captures the connection between two entities in any professional relationship. This includes boss-employee, lawyer-client, student-teacher, co-workers, political relationships on a personal level, etc. This does not include relationships implied from interaction between two entities (e.g. "President Clinton met with Yasser Arafat last week").

Permitted Relation Arguments

Type	Argument 1	Argument 2
Per-Social.Business	PER	PER

Examples

PER-PER

their colleagues			
Class	**Type**	**Argument 1**	**Argument 2**
Possessive Asserted Unspecified	Per-Social.Business	**their**	their **colleagues**

PER-PER

his lawyer			
Class	**Type**	**Argument 1**	**Argument 2**
Possessive Asserted Unspecified	Per-Social.Business	**his**	his **lawyer**

PER-PER

a spokesman for the senator			
Class	**Type**	**Argument 1**	**Argument 2**
Preposition Asserted Unspecified	Per-Social.Business	a **spokesman** for the senator	the **senator**

3.3.2 Family

The Family Relation captures the connection between one entity and another with which it is in any familial relationship.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Per-Social.Family	PER	PER

Examples

PER-PER

relatives of the dead			
Class	*Type*	*Argument 1*	*Argument 2*
Preposition Asserted Unspecified	*Per-Social.Family*	**relatives** *of the dead*	*the* **dead**

PER-PER

his wife			
Class	*Type*	*Argument 1*	*Argument 2*
Possessive Asserted Unspecified	*Per-Social.Family*	**his**	*his* **wife**

PER-PER

his ailing father			
Class	*Type*	*Argument 1*	*Argument 2*
Possessive Asserted Unspecified	*Per-Social.Family*	**his**	*his ailing* **father**

3.3.3 Lasting-Personal

Lasting-Personal captures relationships that meet the following conditions:

1. The relationship must involve personal contact (or a reasonable assumption thereof).

2. There must be some indication or expectation that the relationship exists outside of a particular cited interaction.

The first condition excludes relationships like "Gore's supporters," "her opponents," or "people who help Americans laugh," where there is no expectation that one party will have interacted personally with the other party (or, put another way, spent time with the other party). A reasonable expectation of personal interaction is sufficient: there are relationships that often but not always involve personal contact (like "classmate" or "neighbor") – these will be allowed in

general, as long as their commonplace usage would tend to imply personal contact.

The second condition excludes relationships like "his visitors," "his victims," or "his successor," where there is no indication from the text that the relationship exists outside of the specific event being discussed (a visit, a crime, or a succession, here). In the same way, this excludes cases where one might try to infer a relationship from a description of an event involving both entities (e.g. "**He** visited **her** in the hospital."). Relationships must be explicitly mentioned in the text.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Per-Social.Lasting	PER	PER

Examples

PER-PER

She began an affair in late 1995 with one of the hospital's security police			
Class	*Type*	*Argument1*	*Argument2*
Verbal Asserted Unspecified	*Per-Social.Lasting*	***She***	***one*** *of the hospital's security police*

PER-PER

his friendship with some right-wing mayors			
Class	*Type*	*Argument 1*	*Argument 2*
Possessive Asserted Unspecified	*Per-Social.Lasting*	***his***	*some right-wing* ***mayors***

PER-PER

your priest			
Class	*Type*	*Argument 1*	*Argument 2*
Possessive Asserted Unspecified	*Per-Social.Lasting*	***your***	*your* ***priest***

PER-PER

Her neighbor			
Class	*Type*	*Argument 1*	*Argument 2*
Possessive Asserted Unspecified	*Per-Social.Lasting*	***her***	*her* ***neighbor***

PER-PER

Sarah's classmate

Class	Type	Argument 1	Argument 2
Possessive Asserted Unspecified	Per-Social.Lasting	**Sarah**	Sarah's **classmate**

PER-PER

he and a hunting partner			
Class	**Type**	**Argument 1**	**Argument 2**
Coordination Asserted Unspecified	Per-Social.Lasting	**He**	a hunting **partner**

PER-PER

those close to Princess Diana			
Class	**Type**	**Argument 1**	**Argument 2**
Participial Asserted Unspecified	Per-Social.Lasting	**those** close to Princess Diana	Princess **Diana**

PER-PER

a guy I knew			
Class	**Type**	**Argument 1**	**Argument 2**
Participial Asserted Past	Per-Social.Lasting	a **guy** I knew	**I**

PER-PER

nearly everyone he knows			
Class	**Type**	**Argument 1**	**Argument 2**
Participial Asserted Present	Per-Social.Lasting	nearly **everyone** he knows	**He**

PER-PER

Junta leader Gen. Robert Guei has close personal ties to the chief justice			
Class	**Type**	**Argument 1**	**Argument 2**
Verbal Asserted Unspecified	Per-Social.Lasting	Junta leader Gen. **Robert Guei**	the chief **justice**

3.4. ORG-Affiliation

3.4.1 Employment

Employment captures the relationship between Persons and their employers. This Relation is only taggable when it can be reasonably assumed that the PER is paid by the ORG or GPE. This Relation includes the relationship between an

elected representative and the GPE he represents, for example, "***John Kerry** (D-Massachusetts).*"

Note: This Relation trumps ethnicity or citizenship: "*American troops*" and "*Russian President Vladimir Putin*" should both be annotated as Employment rather than Citizen-Resident-Religion-Ethnicity.

Note: In instances where the Person is a member of some government body (*the Senate, the Knesset, the Supreme Court*, etc.), we will tag this relationship as Membership rather than Employment.

Note: Whenever it is unclear whether an ORG-AFF Relation should be annotated as subtype Employment or subtype Membership, we will choose Membership and move on.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Employment	PER	ORG, GPE

Examples

PER-GPE

the US president			
Class	***Type***	***Argument 1***	***Argument 2***
PreMod Asserted Unspecified	*Org-Aff.Employment*	*the US **president***	***US***

PER-ORG

the CEO of Microsoft			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition Asserted Unspecified	*Org-Aff.Employment*	*the **CEO** of Microsoft*	***Microsoft***

PER-GPE

John Kerry (D-Massachusetts)			
Class	***Type***	***Argument 1***	***Argument 2***
Formulaic Asserted Unspecified	*Org-Aff.Employment*	***John Kerry** (D-Massachusetts)*	***Massachusetts***

PER-GPE

Florida Secretary of State Katherine Harris			
Class	***Type***	***Argument 1***	***Argument 2***
PreMod	*Org-Aff.Employment*	*Florida **Secretary***	***Florida***

Asserted Unspecified		of State	

PER-ORG

an interviewer from The Patriot Ledger			
Class	**Type**	**Argument 1**	**Argument 2**
Preposition Asserted Unspecified	Org-Aff.Employment	an **interviewer** from The Patriot Ledger	The **Patriot Ledger**

PER-ORG

He had previously worked at NBC Entertainment			
Class	**Type**	**Argument 1**	**Argument 2**
Verbal Asserted Past	Org-Aff.Employment	**He**	**NBC Entertainment**

3.4.2 Ownership

Ownership captures the relationship between a Person and an Organization owned by that Person.

Note: If the second argument is not an ORG, use the Agent-Artifact Relation.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Ownership	PER	ORG

Examples

PER-ORG

the owner of Gibson's Hardware Store			
Class	**Type**	**Argument 1**	**Argument 2**
Preposition Asserted Unspecified	Org-Aff.Ownership	the **owner** of Gibson's Hardware Store	**Gibson's Hardware Store**

PER-ORG

[Dallas Cowboys owner] Jerry Jones			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod Asserted Unspecified	Org-Aff.Ownership	Dallas Cowboys **owner**	**Dallas Cowboys**

3.4.3 Founder

Founder captures the relationship between an agent (Person, Organization, or GPE) and an Organization or GPE established or set up by that agent.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Founder	PER, ORG	ORG, GPE

Examples

PER-ORG

Joseph Conrad Parkhurst, [who founded the motorcycle magazine Cycle World in 1962], has died.			
Class	*Type*	*Argument1*	*Argument2*
Verbal Asserted Unspecified	*Org-Aff.Founder*	*who*	*the motorcycle magazine*

3.4.4 Student-Alum

Student-Alum captures the relationship between a Person and an educational institution the Person attends or attended. Please note that only attendance is required. It is not necessary for the person to have officially graduated from the institution.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Student-Alum	PER	ORG.Educational

Examples

PER-ORG

the students at Nazareth Academy			
Class	*Type*	*Argument 1*	*Argument 2*
Preposition Asserted Unspecified	*Org-Aff.Student-Alum*	*the students at Nazareth Academy*	*Nazareth Academy*

PER-ORG

Card graduated from the University of South Carolina			
Class	*Type*	*Argument 1*	*Argument 2*
Verbal Asserted Unspecified	*Org-Aff.Student-Alum*	*Card*	*the University of South Carolina*

3.4.5 Sports-Affiliation

Sports-Affiliation captures the relationship between a player, coach, manager, or assistant and his or her affiliation with a sports organization (including sports leagues or divisions as well as individual sports teams). This Relation subtype exists because it often requires domain-specific world knowledge to determine

whether a sports team is made up of paid or unpaid players (i.e. whether a relationship between a player and a team qualifies as Employment).

We will **always** use the Sports-Affiliation subtype for EMP-ORG Relations between a PERSON entity and an ORGANIZATION entity with the subtype Sports.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Sports-Aff	PER	ORG

Examples

PER-ORG

J a goaltender in the National Hockey League			
Class	*Type*	*Argument 1*	*Argument 2*
Preposition Asserted Unspecified	*Org-Aff.Sports-Aff*	*a **goaltender** in the National Hockey League*	*the **National Hockey League***

PER-ORG

Zidane led France to the European title this year				
Class	*Type*	*Argument1*	*Argument2*	*Timestamp: Within*
Other Asserted Unspecified	*Org-Aff.Sports-Aff*	***Zidane***	***France***	*This year*

PER-ORG

One other Major League baseball manager			
Class	*Type*	*Argument 1*	*Argument 2*
PreMod Asserted Unspecified	*Org-Aff.Sports-Aff*	*One other Major League baseball **manager***	***Major League baseball***

PER-ORG

some former NFL first-rounders			
Class	*Type*	*Argument 1*	*Argument 2*
PreMod Asserted Past	*Org-Aff.Sports-Aff*	*some former NFL **first-rounders***	***NFL***

PER-ORG

a first-round pick of the Miami Dolphins in 1998			
Class	*Type*	*Argument1*	*Argument2*
Preposition Asserted	*Org-Aff.Sports-Aff*	*a first-round **pick** of the*	*the **Miami Dolphins***

Unspecified		Miami Dolphins in 1998	

3.4.6 Investor-Shareholder

Investor-Shareholder captures the relationship between an agent (Person, Organization, or GPE) and an Organization in which the agent has invested or in which the agent owns shares/stock. Please note that agents may invest in GPEs.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Shareholder	PER, ORG, GPE	ORG, GPE

Examples

PER-ORG

its stockholders			
Class	*Type*	*Argument 1*	*Argument 2*
Possessive Asserted Unspecified	*Org-Aff.Investor-Shareholder*	*its **stockholders***	***its***

PER-ORG

Time Warner's largest shareholder, with more than 120 million shares			
Class	*Type*	*Argument 1*	*Argument 2*
Possessive Asserted Unspecified	*Org-Aff. Investor-Shareholder*	*Time Warner's largest **shareholder**, with more than 120 million shares*	***Time Warner***

ORG-GPE

In 1992, the Motorola Company invested 120 million US dollars in Tianjin…			
Class	*Type*	*Argument 1*	*Argument 2*
Possessive Asserted Unspecified	*Org-Aff.Investor-Shareholder*	*the **Motorola Company***	***Tianjin***

3.4.7 Membership

Membership captures the relationship between an agent and an organization of which the agent is a member. Organizations and GPEs can be members of other Organizations (such as *NATO* or *the UN*). As discussed above, instances where a Person is a member of an elected government body (*the Senate, the Knesset, the Supreme Court*, etc.) will be tagged as Membership, even when the word "member" is not present (e.g. *Supreme Court justice*).

We will always tag the Relation between members of terrorist Organizations and those organizations as ORG-AFF.Membership.

We will annotate leaders as members of their organizations. This includes presidents as members of their administrations.

Whenever it is unclear whether an ORG-AFF Relation should be annotated as subtype Employment or subtype Membership, we will choose Membership and move on.

Note: We will include affiliation with political parties, even when that affiliation is no more than an expression of voting trends (i.e. "*Democratic voters* ...").

Note: We will **not** include religious affiliation, even when such affiliation is with an established organization (i.e. "*Catholic parishioners*…"). Such Relations will be annotated using the General-Affiliation.Citizen-Resisdent-Religion-Ethnicity Relation. For a complete discussion of this Subtype, please see Section 3.6.1 below.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Membership	PER, ORG, GPE	ORG

Examples

PER-ORG

an activist for Peace Now			
Class	*Type*	*Argument 1*	*Argument 2*
Preposition Asserted Unspecified	*Org-Aff.Membership*	an **activist** for **Peace Now**	**Peace Now**

PER-ORG

a member of the Supreme Court			
Class	*Type*	*Argument 1*	*Argument 2*
Preposition Asserted Unspecified	*Org-Aff.Membership*	a **member** of the Supreme Court	the Supreme **Court**

PER-ORG

Supreme Court justice			
Class	*Type*	*Argument 1*	*Argument 2*
PreMod Asserted Unspecified	*Org-Aff.Membership*	Supreme Court **justice**	Supreme **Court**

PER-ORG

Senate leaders			
Class	*Type*	*Argument 1*	*Argument 2*

| PreMod
Asserted
Unspecified | Org-Aff.Membership | Senate **leaders** | **Senate** |

PER-ORG

GOP vice presidential nominee			
Class	*Type*	*Argument 1*	*Argument 2*
PreMod Asserted Unspecified	Org-Aff.Membership	GOP vice presidential **nominee**	**GOP**

PER-ORG

a popular Republican governor			
Class	*Type*	*Argument 1*	*Argument 2*
PreMod Asserted Unspecified	Org-Aff.Membership	a popular Republican **governor**	**Republican**

PER-ORG

Republican voters			
Class	*Type*	*Argument 1*	*Argument 2*
PreMod Asserted Unspecified	Org-Aff.Membership	Republican **voters**	**Republican**

GPE-ORG

three permanent UN member countries			
Class	*Type*	*Argument 1*	*Argument 2*
PreMod Asserted Unspecified	Org-Aff.Membership	three permanent UN member **countries**	**UN**

3.5. Agent-Artifact

3.5.1 User-Owner-Inventor-Manufacturer

This Relation applies when an agent owns an artifact, has possession of an artifact, uses an artifact, or caused an artifact to come into being.

Note: if the second argument is an Organization, use ORG-Affiliation.Ownership (arg1=PER) or Part-Whole.Subsidiary (arg1=ORG or GPE).

Permitted Relation Arguments

Type	Argument 1	Argument 2
Agent-Artifact.UOIM	PER, ORG, GPE	FAC

Examples

PER-FAC

[My house] is in West Philadelphia			
Class	*Type*	*Argument 1*	*Argument 2*
Possessive Asserted Unspecified	*Agent-Artifact.UOIM*	*My*	*My* **house**

3.6. Gen-Affiliation

3.6.1 Citizen-Resident-Religion-Ethnicity

Citizen-Resident-Religion-Ethnicity describes the Relation between a PER entity and

- the GPE in which they have citizenship
- the GPE or Location in which they live
- the religious ORG or PER entity with which they have affiliation
- the GPE or PER entity that indicates their ethnicity

We consider a person's birthplace as a place of residence for this purpose (e.g. "the Russian-born athlete" or "he was born in San Francisco").

Note: The relationship between a person and a GPE they represent (e.g. John Kerry, MA) is ORG-AFF.Employment.

Note: The default category for a Relation indicated by a GPE premodifier is GEN-AFF.Citizen-Resident-Religion-Ethnicity (e.g. "Chicago gangs"), not PHYS.Located. (This follows the same reasoning that dictates GPE premodifiers defaulting to role GPE.)

Permitted Relation Arguments

Type	Argument 1	Argument 2
Gen-Aff.CRRE	PER	PER.Group, LOC, GPE, ORG

Examples

PER-GPE

[U.S. businessman] Edmond Pope			
Class	*Type*	*Argument 1*	*Argument 2*
PreMod Asserted Unspecified	*Gen-Aff.CRRE*	*U.S.* **businessman**	*U.S.*

PER-GPE

their hometown of Arusha, Tanzania

Class	Type	Argument 1	Argument 2
Possessive Asserted Unspecified	Gen-Aff.CRRE	**Their**	their **hometown** of Arusha, Tanzania

PER-GPE

Some Missouri voters			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod Asserted Unspecified	Gen-Aff.CRRE	Some Missouri **voters**	**Missouri**

PER-GPE

a sheep shearer from New Zealand			
Class	**Type**	**Argument 1**	**Argument 2**
Preposition Asserted Unspecified	Gen-Aff.CRRE	a sheep **shearer** from New Zealand	**New Zealand**

PER-GPE

Albanian rebel fighters			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod Asserted Unspecified	Gen-Aff.CRRE	Albanian rebel **fighters**	**Albanian**

PER-PER

Cuban-American people			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod Asserted Unspecified	Gen-Aff.CRRE	Cuban-American **people**	**Cuban-American**

PER-PER

two Jewish settlers			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod Asserted Unspecified	Gen-Aff.CRRE	two Jewish **settlers**	**Jewish**

PER-ORG

a Methodist minister			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod Asserted Unspecified	Gen-Aff.CRRE	a Methodist **minister**	**Methodist**

PER-ORG

members of Walnut Lane Baptist Church			
Class	**Type**	**Argument 1**	**Argument 2**
Preposition Asserted Unspecified	Gen-Aff.CRRE	**members** of Walnut Lane Baptist Church	**Walnut Lane Baptist Church**

PER-GPE, PER-GPE

the Serbian people of Bosnia-Herzegovina			
Class	**Type**	**Argument 1**	**Argument 2**
Preposition Asserted Unspecified	Gen-Aff.CRRE	the Serbian **people** of Bosnia-Herzegovina	**Bosnia-Herzegovina**
PreMod Asserted Unspecified	Gen-Aff.CRRE	the Serbian **people** of Bosnia-Herzegovina	**Serbian**

3.6.2 Org-Location-Origin

Org-Location-Origin captures the relationship between an organization and the LOC or GPE where it is located, based, or does business.

Note: Subsidiary trumps this Relation for government organizations. For instance, "the U.S. Army" should be marked as Subsidiary rather than Org-Location-Origin.

We will also tag the Relation between a GPE and the industries (ORGs) that they control as Part-Whole.Subsidiary:

> … *state-controlled banks* …

> Part-Whole.Subsidiary (*banks*, *state*)

Permitted Relation Arguments

Type	Argument 1	Argument 2
Gen-Aff.Loc-Origin	ORG	LOC, GPE

Examples

ORG-LOC

a small robotics company in a St. Louis suburb			
Class	**Type**	**Argument 1**	**Argument 2**
Preposition Asserted Unspecified	Gen-Aff.Loc-Origin	a small robotics **company** in a St. Louis suburb	a St. Louis **suburb**

ORG-LOC

the area's third-largest employer			
Class	*Type*	*Argument 1*	*Argument 2*
Possessive Asserted Unspecified	*Gen-Aff.Loc-Origin*	*the area's third-largest* **employer**	*the* **area**

ORG-GPE

a leading Chinese pharmaceutical company			
Class	*Type*	*Argument 1*	*Argument 2*
PreMod Asserted Unspecified	*Gen-Aff.Loc-Origin*	*a leading Chinese pharmaceutical* **company**	**Chinese**

ORG-GPE, ORG-GPE

its Beijing branch			
Class	*Type*	*Argument 1*	*Argument 2*
PreMod Asserted Unspecified	*Gen-Aff.Loc-Origin*	*its Beijing* **branch**	**Beijing**
Possessive Asserted Unspecified	*Gen-Aff.Loc-Origin*	**its**	**Beijing**

4 Cross-Type Metonymy Relations

Note: LDC annotates Cross Type Metonymy during Entity annotation.

Cross-Type Metonymy occurs when more than one aspect of an entity is referenced in a document. For example, entities of type Organization often have a physical entity of type Facility associated with them. These two incarnations of the same entity will be tagged as type Organization when the textual reference is directly referring to the organization and as type Facility when the mention refers to the physical building.

At the Relation annotation stage, we will group entities of different types together with a Metonymy Relation when they refer to different aspects of the same underlying entity.

The most common Cross-Type Metonymy Link occurs between Organizations and the Facilities they occupy. These two EDT entities are often referred to using the same strings of text.

Examples

In this example, there are two mentions of a hospital. The first mention is referencing the physical building or hospital facility. The second references the organization that runs or administrates the hospital.

> *Wouters, 42, died an hour later at **St. John Macomb Hospital**. The suspect died later the same night, **hospital** spokeswoman Rebecca O'Grady said Thursday. His name wasn't released.*

We will annotate examples like this as follows.

Type	*Argument 1*	*Argument 2*
Metonymy	***St. John Macomb Hospital***	*hospital*