Relation 5: Entity-Origin

Preamble

Moldovan et al. (2004) have a relation SOURCE/FROM(X,Y) defined as "a place X where an entity Y comes from", e.g., *"olive/X oil/Y"* or *"I got it/Y from China/X"*.

Levi (1979) has FROM as one of her relations; it refers to a source and acts as an ablative, e.g., *olive oil*, *test-tube baby*, *apple seed*.

Warren (1978) has an Origin-OBJ class (e.g., *seafood*), which is a sub-class of her top-level class Location.

FrameNet also has a frame Origin, where an Entity begins its existence in the context of an Origin, which can be a place, culture, text etc.

http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Origin

It also has a Motion_scenario frame

http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Motion_scenario&

where a Source is the location an entity initially occupies before its change of location.

Definition

Entity-Origin(*X, Y*) is true for a sentence *S* that mentions the entities *X* and *Y* if and only if

(1) *S*, *X* and *Y* are in accordance with the general annotation guidelines:

http://docs.google.com/Doc?docid=dfhkmm46_0f63mfvf7

(2) the situation described in *S* entails that *Y* is the origin of an entity *X* (rather than its location), and *X* is coming or derived from that origin.

Definition – Restrictions

(a) Restrictions on the Entity *X*:

1. In the given context, *X* should have the ontologically type of *entity* (i.e., a physical or abstract object), as opposed to an *eventuality* (event/state; also known as occurrence/activity). A pragmatic test to decide between the two is that events can be modified temporally (*X* took *N* minutes; *X* happened yesterday), while entities cannot. Note that this decision must always be made in context, since many nouns are ambiguous between an event and an entity reading (e.g., many nominalizations are systematically ambiguous between an event and a result entity reading. Context often, though not always, disambiguates.

2. Non-physical objects are treated in the same way as physical objects. For example, in "a translation/*X* from a website/*Y*", the translation has been copied from the website and its new "incarnation" was pasted somewhere else. Thus, the sentence meets restrictions 1 and 3, and can be treated as a standard case of Entity-Origin.

3. It should NOT remain at or end up at the Origin (in the case of spatial origins).

4. It should NOT consist exclusively of the Origin (in the case of material origins); equivalently, it should have undergone substantial processing in order to produce the entity *X*. As a result, "tobacco/*Y* ash/*X*" and "peanut/*Y* butter/*X*" are positive examples (because the ash does not consist of tobacco any more), but "aluminium/*Y* plane/*X*" is a near miss.

5. The entity *X* should NOT be a component of the origin *Y*, e.g., "apple/*Y* seed/*X*", when the "seed" is not separated from the "apple", we have a negative example. This restriction is meant to prevent overlaps with Component-Whole.

6. In case of material origin, the bulk of *X* should be made up from products of *Y*; "rye/*Y* whiskey/*X*" is a positive example, while "apple/*Y* pancake/*X*" is a negative one (because the *apples* are not the main ingredient of the *cake*).

(b) The Origin can be:

1. abstract (e.g., "intuitions/*X* from mathematics/*Y*");

2. physical (spatial/geographical) location (e.g., "message/*X* from outer space/*Y*");

3. material (e.g., "peanut/*Y* butter/*X*");

4. a person or a company (e.g. "tablets/*X* from a dentist/*Y*");

5. temporal (e.g., "homes/*X* from a simpler time/*Y*").

(c) Additional restrictions on the Origin *Y*:

1. *Y* should NOT be depicted in the sentence as being involved as an agent in the process of bringing the entity *X* into existence or making it available (such as in the examples "light/*X* bulb/*Y*" -- which is Cause-Effect, "silk/*X* worm/*Y*" -- which is Product-Producer). This restriction is meant to prevent overlaps with Product-Producer and Cause-Effect.

2. This is often particularly difficult to judge for person/company Origins. The presence of "producer-like" verbs (manufacture, generate) or "causer-like" verbs (cause, bring about) is often good evidence against the use of Entity-Origin.

3. To resolve a class of borderline cases, we consider objects emitting radiation/heat/light... as Causers of such emissions, not just Origins.

(d) An Entity can have several origins, and each of them separately will count as an Origin.

Definition - Overlaps

Potentially overlapping relations:

• Component-Whole: distinguished by restriction (a.3)

• Product-Producer, Cause-Effect: distinguished by restrictions (c.1) and (c.2)

• Message-Topic: Only a case of apparent overlap. In contrast to Message-Topic, Entity-Origin describes the relationship between the message and the communicator ("news from the press"), rather than between the message and the topic ("news on the hostage crisis").

• Other: for locations (restriction a.1), materials (restriction a.2), flavours/types (restriction a.4)

In accordance with the general annotation guidelines, we consider examples involving motion verbs (e.g. "put", "remove", "run", "enter", etc) that is verbs actually describing a movement activity, as Entity-Destination or Entity-Origin examples, according to the direction of the motion. Note that a relation such as Member-Collection is not necessarily negated by movement away from the Collection, but if a sentence focuses on movement away from the Collection, we consider Entity-Origin is more salient than Member-Collection.

Positive Examples

"Under state law, minors are not permitted to have <e1>grain</e1> <e2>alcohol</e2>, even if a parent provides it to their children."

Entity-Origin(e2, e1)

Comment: This is a prototypical example of a material Entity-Origin relation. Restriction (b.4) applies.

"One basic trick involves a spectator choosing a <e1>card</e1> from the <e2>deck</e2> and returning it."

Entity-Origin(e1, e2)

Comment: While a card is a member of the deck, the sentence focuses on movement away from the deck.

"The <e1>girl<e1> ran away from her <e2>family</e2>."

Entity-Origin(e1, e2)

Comment: While the girl is still a member of the family, the sentence focuses on movement away from the family.

"Upon first bite Trahyn found that the cake was made with <e1>bacon</e1> <e2>grease</e2>. "

Entity-Origin(e2, e1)

Comment: This is a prototypical example of a material Entity-Origin relation.

"One thing SETI has agreed on is that if a <e1>message</e1> from <e2>outer space</e2> is discovered, once it is confirmed by scientists from outside of the organization to authenticate the source, the message will be made known to the public right away."

Entity-Origin(e1, e2)

Comment: This is a prototypical example of a spatial/geographical Entity-Origin relation.

"Others note that <e1>apple</e1> <e2>seeds</e2> found in Anatolia were carbon dated 6500 BCE."

Entity-Origin(e2,e1)

Comment: The seeds used to be part of the apple, but it is reasonable to assume that the apple does not exist any more,

and that only the seeds were found. In accordance with restriction (b.3), Component-Whole is therefore superseded by

Entity- (spatial) Origin. (Compare the negative apple seed example below.)

"The word '<e1>naughtiness</e1>' is derived from a <e2>word</e2> meaning worthless."

Entity-Origin(e1, e2)

Comment: This is a prototypical example of an abstract Entity-Origin relation.

"<e1>This book</e1>is from the 17th <e2>century</e2>."

Entity-Origin(e1, e2)

Comment: Temporal Entity-Origin relation.

Near-miss Negative Examples

"The temple claims to have the only <e1>orange</e1> <e2>tree</e2> in Paro, and the picking of fruit from the tree is strictly prohibited."

Product-Producer(e1,e2)

Comment: The sentence violates definition restriction (c.1). Here the tree is actively involved in bringing the oranges into existence, and does not serve as a raw material. This is a Product-Producer relation.

"Upon prior <e1>statement</e1> from the <e2>president</e2> in case of reasons of emergency, national security, or public interest, and solely while such reasons remains, the State may subject the patent to a compulsory license at any time and, in such case, the National Bureau of Industrial Property may grant the requested licenses, regardless of the patent holder's right to compensation..."

Product-Producer(e1,e2)

Comment: The sentence violates definition restriction (c.1) where the origin should NOT be actively involved in the process of bringing the entity into existence; this is Product-Producer relation.

"The return to Earth early Monday of the Shenzhou VI with two astronauts on board marked the end of stage one in China's <e1>space</e1> <e2>odyssey</e2>."

Other

Comment: In this sentence, the space is not the origin, but the destination or the location of the odyssey (cf. restriction b.1). We do not have a relation for this.

"Extraordinarily large <e1>apple</e1> <e2>seeds</e2> are often found in Granny Smith apples".

Component-Whole(e2,e1)

Comment: The apple still contains the seeds; therefore this cannot be an Origin-Entity relation: restriction (b.3) is violated.

(But compare to the positive apple seed example above.)

"Eventually the <e1>company</e1> manufactured the <e2>machines</e2>."

Product-Producer(e2,e1)

Comment: The sentence violates definition restriction (c.1). This is a Product-Producer relation.

"You proved that a <e1>gas</e1> takes up <e2>space</e2>."

Other

Comment: The space is not the origin for the gas. This instance is not covered by any of our present relations.

Since it is a question and the relation in question occurs in an embedded sentence, we mark it as "Exclude".

"A person infected with a particular <e1>flu</e1> <e2>virus</e2> strain develops an antibody against that virus."

Cause-Effect(e2,e1)

Comment: *flu* is a state, *virus* is a causal agent. This violates restriction (c.1); it is an instance of Cause-Effect.