Relation 4: Content-Container

Preamble

www.merriam-webster.com defines "contain" as "have within, hold, comprise, include". Thus, a container must enclose the thing it contains. Webster also defines "container" as "receptacle (as a box or jar) for holding goods; portable compartment in which freight is placed (as on a train or ship) for convenience of movement".

Nastase & Szpakowicz (2003) have a relation CONTAINER(*X*,*Y*) meaning that "*X* contains *Y*", e.g., "film/*X* music/*Y*". They also have a reverse relation CONTENT(*X*,*Y*) meaning that "*X* is contained in *Y*", e.g., "apple/*Y* cake/*X*".

Both previous examples are negative for the definition below.

Definition

Content-Container(X, Y) is true for a sentence S that mentions 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 *X* is or was (usually temporarily) stored or carried inside Y.

Definition – Restrictions

(a) The container must be clearly delineated in space (so for example atmosphere, sea or cloud are locations rather than containers).

(b) Legal entities such as people and institutions should not be considered as content.

(c) People should not be considered as containers (e.g., for thoughts, feelings, etc).

(d) Vehicles and buildings should not be considered as containers. Acceptable exceptions are those actually used to store or carry something.

(e) The content may be removed from the container without significantly changing the nature of the container; more precisely, the content is not affixed to the container, nor it is usually considered to be part of the container.

Definition – Notes

(i) The relation applies equally well to physical content and to abstract content. In the latter case metonymy can usually be found in the sentence.

(ii) 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. The reason is to prevent possible overlaps with "stative" relations such as Content-Container (in these specific sentences). Note, however, that in some cases, e.g., in passive voice and in certain contexts, these verbs can describe a static situation, in which case we would have Content-Container.

Definition – Overlaps

Potentially overlapping relations:

- Entity-Origin: the difference is that Content-Container is static relation. The overlap is prevented by (ii).
- Entity-Destination: the difference is that Content-Container is static relation. The overlap is prevented by (ii).
- Part-Whole relations (e.g. Component-Whole and Member-Collection): Despite of (e), in some cases it might not be clear whether an element is part (integral part or member) of another element or whether a functional relation holds between them.

Positive Examples

"The <e1>apples</e1> are in the <e2>basket</e2>."

Content-Container(e1, e2)

Comment: This is a prototypical example of Content-Container.

"The <e1>plane</e1> contained precious <e2>cargo</e2>."

Content-Container(e2, e1)

Comment: While a plane is a vehicle, a cargo clearly obeys restriction (d) and (e).

"The <e1>theory</e1> contained many <e2>flaws</e2>."

Content-Container(e2, e1)

Comment: The flaws are "contained in" the theory in an abstract sense: see note (i). Part (2) of the definition is fulfilled if we assume that the flaws can be eliminated and are not an integral part of the theory. We might also argue that flaws do not serve a purpose in the theory, so condition (e) holds and we exclude Component-Whole.

"I emptied the <e1>wine</e1> <e2>bottle</e2> into my glass and toasted my friends."

Content-Container(e1, e2)

Comment: This satisfies (2), because the sentence entails that the bottle contained wine. It also satisfies (e), because an empty bottle is still a bottle.

"How do I recognize a <e1>room</e1> that contains <e2>radioactive materials</e2>?"

Content-Container(e2, e1)

Comment: the room is "clearly delineated in space", so (a) is satisfied; we can remove the radioactive materials without changing the nature of the room, so (e) is satisfied.

"The <e1>kitchen</e1> holds patient <e2>drinks</e2> and snacks."

Content-Container(e2, e1)

Comment: Even if a "kitchen" is more a location than a container, in this case we can interpret that "drinks" are stored there, probably in the "kitchen" cabinets, so (d) is satisfied.

Near-miss Negative Examples

"The <e1>plane</e1> contained an innovative turbine <e2>engine</e2>."

Component-Whole(e2, e1)

Comment: This sentence violates (e) in the definition of Content-Container. If you remove the engine from a plane, you have changed its nature. On the other hand, the engine is an integral and functional part of the plane.

"I drank about a <e1>bottle</e1> of <e2>wine</e2>."

Other

Comment: This sentence violates (2) in the definition of Content-Container. The word "bottle" is used as a unit of measurement, so the sentence does not entail that the wine was inside a bottle. We have Measure-Measured(e1, e2) -- a bottle is a measure of the quantity of wine -- but we assign Other, since Measure-Measured is not on the list of nine relations.

"Deep inside the <e1>forest</e1> there is a huge <e2>tree</e2> where children used to play."

Member-Collection(e2, e1)

Comment: This sentence violates condition (e). Removing a tree from the forest does change the forest. The tree is part of the forest, specifically a member of the forest.

"The <e1>macadamia nuts</e1> in the <e2>cake</e2> also make it necessary to have a very sharp knife to cut through the cake neatly."

Component-Whole(e1, e2)

Comment: This sentence violates (e) in the definition of Content-Container. If you remove the nuts from the cake, you have changed the nature of the cake. The nuts are ingredients/components of the cake. Stuff-Object is not true because in this case nuts can be physically separated from the cake.

"Ornette Coleman's crazy <e1>music</e1> was perfect in Cronenberg's <e2>film</e2> Naked Lunch."

Component-Whole(e1, e2)

Comment: This example is problematic for two reasons. First, it is only true in an abstract sense that the music is "inside" the film. Second, it could be argued that removing the music from the film would change the nature of the film. Still, the music is a functional and separable component of the film.

"The <e1>apples</e1> were stacked in a <e2>pyramid</e2>."

Component-Whole(e1, e2)

Comment: The sentence is probably talking about a pyramid made of apples. It is possible, but less likely, that the apples are stored in a pyramidal container. This sentence violates (e) in the definition of Content-Container. If you remove the apples, the pyramid is gone. The pyramid is made of apples -- has them as components. Given that the apples pyramid has a structure, and apples are in a specific spatial position with respect to each other, we exclude Member-Collection.

"The <e1>book</e1> contained a <e2>chapter</e2> on ants."

Component-Whole(e2, e1)

Comment: It is reasonable to say that the chapter is inside the book, so condition (2) is fulfilled. Removing a chapter from a book, however, likely changes the nature of the book, so condition (e) is violated. It is a prototypical example, because the chapter is definitely a component of the book.

"I broke the <e1>wine</e1> <e2>bottle</e2>."

Other

Comment: We may assume that the wine bottle was intended to hold wine, but the sentence does not tell us whether the bottle holds wine or even whether it may have held wine in the past. Therefore condition (2) is violated. Instead we could say Purpose-Tool(e1, e2) -- the bottle is a tool for holding wine -- but lacking this relation on the list, we assign Other.

"I put the <e1>apples</e1> in the <e2>basket</e2>."

Entity-Destination(e1, e2)

Comment: In this sentence, the lexical choice and perspective focus on the movement. A static relation such as Content-Container would describe what is only a possible outcome which we do not care about.

"I was removing the <e1>apples</e1> from the <e2>basket</e2>."

Entity-Origin(e1, e2)

Comment: In this sentence, the lexical choice and perspective focus on the movement relation. A "stative" (or static?) relation such as Content-Container would describe what is only a possible outcome (should the process of removing be interrupted) which we do not care about.

"When <e1>veterans</e1> hold these negative <e2>emotions</e2> inside, emotions can sometimes destroy them."

Other

Comment: People should not be considered containers for their thoughts, feelings, and emotions, see (c).