

Relation 3: Product-Producer

Preamble

Levi (1979) has a MAKE relation in two versions: MAKE1(X,Y) means ‘ Y physically produces, causes to come into existence X ’, e.g., *honey/X bee/Y*. MAKE2(X,Y) means ‘ Y is made up/out of X ’. There are three subtypes of MAKE2: (a) X is a unit and Y is a configuration, e.g., *root/X system/Y*; (b) X represents a material and Y represents a mass or an artefact, e.g., *chocolate/X bar/Y*; and (c) Y represents human collectives and X specifies their membership, e.g., *worker/X teams/Y*.

Moldovan et al., (2004) have a relation MAKE/PRODUCE(X,Y) defined as "an animated entity creates or manufactures another entity", e.g., *honey/X bee/Y* and *GM/Y car/X*.

Nastase & Szpakowicz (2003) have a relation Product(X,Y) meaning that " X is a product of Y ", e.g., *plum/X tree/Y*.

Definition

Product-Producer (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:

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(2) the situation described in S entails the fact that X is a product of Y , or Y produces X .

Definition – Restrictions

- (a) The producer should be actively involved in the process of bringing the product into existence and not just serve as a raw material.
- (b) The product results from a process and was not present before the process: the product must differ from its raw materials in form or function.
- (c) Tangible concrete objects, tangible substances, organisations and positions in organisations are acceptable Products.
- (d) Creative works and information-bearing mental activities are acceptable Products. Emotions and purely reactive activities are not considered to be information-bearing. In the case of creative works, mechanical recording or performance of previously-existing works are not considered to be creative acts. Human performance is considered to be creative.
- (e) Events, states and entities that are neither concrete nor information-bearing cannot be Products.
- (f) Events, states and non-concrete or non-organisational entities cannot be Producers.
- (g) A Product may have more than one Producer. For example, both the writing of a book and the printing of a book are production events relating to different aspects of the book.
- (h) A production event can have multiple stages, but once it has been completed its production is over. Fixing or changing a product at a later time does not count as production. There may be cases where the delineation is unclear, these will require a judgment call by the annotator.

Definition – Overlaps

Cause-Effect and Product-Producer are closely related: production of an entity inherently has a causal nature. The main distinguishing criterion is that Products must be concrete physical entities, whereas Effects must be events, states or non-physical objects such as light or noise.

There is an overlap with Instrument-Agency that usually appears when using something implies its production. In this case the Product-Producer relation according to our general annotation guidelines is considered more informative.

There is also potential overlap with Entity-Origin. The main difference between the two relations is that in the case of Product-Producer (X, Y), Y is actively involved in making X , and in the case of Entity-Origin (X, Y) relation, Y is not actively involved.

Positive Examples

"The <e1>honey</e1> <e2>bee</e2> is the third insect genome published by scientists, after a lab workhorse, the fruit fly, and a health menace, the mosquito."

Product-Producer(e1, e2)

Comment: This is a typical example of Product-Producer. Honey is a tangible concrete object (c), and the bee is actively involved in producing it (a).

"The goat, sheep, water buffalo, camel, and <e1>cow</e1> all give nourishing <e2>milk</e2>."

Product-Producer(e2, e1)

Comment: Milk is a tangible concrete substance (c), and the cow is actively involved in producing it (a).

"The <e1>company</e1> has manufactured its <e2>products</e2> under that brand ever since."

Product-Producer(e2, e1)

Comment: Products are tangible entities (c) and the company is actively involved in producing its products (a).

"<e1>Companies</e1> that are oriented towards the use of computers or information technology to promote learning have created the <e2>role</e2> of the chief knowledge officer."

Product-Producer(e2, e1)

Comment: The role is a position in an organisation (c) and the companies are actively involved in creating instances of that role (a).

"The <e1>machine</e1> makes <e2>bottle tops</e2>."

Product-Producer(e2, e1)

Comment: Bottle tops are tangible concrete objects (c), and under the default interpretation the machine is actively involved in producing it (a) and is not just an instrument.

"Baker's yeast <e1>enzymes</e1> convert sugar (glucose, fructose) to <e2>ethanol</e2> and carbon dioxide."

Product-Producer(e2, e1)

Comment: Ethanol is a tangible concrete substance (c) and the enzymes are actively involved in producing it (a). The sugars are changed in both form and function during the production process (b).

"The <e1>director</e1> has finished his new <e2>film</e2>."

Product-Producer(e2, e1)

Comment: A film is a creative work (d) and the director is actively involved in producing it (a).

"That <e1>man</e1> built his <e2>home</e2> doing all his own labor. "

Product-Producer(e2, e1)

Comment: The tense signals that building event was completed, so it can be inferred that the Product-Producer relation holds (contrast to the similar sentence in the negative examples).

"The essence of the new <e1>philosophers</e1>' <e2>theory</e2> was to challenge the (French) stereotype that an intellectual was necessarily a left-wing intellectual, such as illustrated by Jean-Paul Sartre or, in a completely different stance, Michel Foucault."

Product-Producer(e2, e1)

Comment: A theory is a creative work or information-bearing mental product (d) and the philosophers were actively involved in producing it (a).

"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: Statements are creative works and thus restriction (d) is satisfied.

"The <e1>factory</e1> is producing 50,000 <e2>cars</e2> per day."

Product-Producer(e2, e1)

Comment: The progressive sentence here expresses iteration/repetition of a process rather than a single ongoing process.

"The <e1>government</e1> built 10,000 new <e2>homes</e2>."

Product-Producer(e2, e1)

Comment: The government is described as an active participant in the building event and without the government the houses would not have been built.

"The <e1>paper</e1> was co-authored by an <e2>academic</e2> and an industrial researcher."

Product-Producer(e1, e2)

Comment: The paper has more than one Producer; taking either of these as Producer arguments would give a positive example.

Near-miss Negative Examples

"The <e1>machine</e1> makes <e2>noise</e2>."

Cause-Effect(e1, e2)

Comment: The produced noise is neither a concrete object nor a creative work, so restriction (c) is violated.

"This 8 day <e1>music</e1> <e2>clock</e2> needs winding only once a week."

Cause-Effect(e1, e2)

Comment: The music is a creative work, but it is not composed by the clock; see the discussion of performances under (d).

"An <e1>arbitrageur</e1> makes <e2>money</e2> by taking advantage of a small price disparity, selling in one market while buying in the other."

Other

Comment: "Making money" does not entail bringing money into existence, so condition (b) is violated.

"The reactor will aim to turn sea water into fuel by mimicking the way the <e1>sun</e1> produces <e2>energy</e2>."

Cause-Effect(e1, e2)

Comment: The restriction (c) is violated, 'energy' is not a concrete physical object.

"That year, summer students at the VLA made the first discovery of <e1>radio emission</e1> from a <e2>brown dwarf star</e2>."

Cause-Effect(e2, e1)

Comment: The restriction (c) is violated, 'emission' is not a concrete physical object.

"All <e1>olive</e1> <e2>oil</e2> —which is, after all, fat—has 120 calories per tablespoon (33 kJ/mL)."

Entity-Origin(e2, e1)

Comment: The sentence violates restriction (a) since the olive is only passively involved in the production of the oil.

"She's working on a collar and lead made of <e1>alligator</e1> <e2>leather</e2> with diamond and gold charms."

Entity-Origin(e2, e1)

Comment: The sentence violates restriction (a), since (under the default interpretation) the alligator is not actively participating in the production of the leather.

"Bishop is out to settle his score with Claude Malloche, an international <e1>assassin</e1> responsible for the <e2>death</e2> of Bishop's brother."

Cause-Effect(e1, e2)

Comment: The sentence violates restriction (e), as death is an event.

"At an individual level, <e1>mental illness</e1> is one of the biggest causes of personal <e2>unhappiness</e2> in our society."

Cause-Effect(e1, e2)

Comment: The sentence violates restriction (e),(f), as mental illness and unhappiness are states. This should be Cause-Effect(mental illness, unhappiness).

"<e1>War</e1> only causes destruction and <e2>death</e2>."

Cause-Effect(e1, e2)

Comment: The sentence violates restrictions (e),(f), because war and death are events.

"In the middle of playing <e1>music</e1> <e2>instrument</e2>, players are often forced to stop."

Other

Comment: The sentence violates restriction (a) since the instrument is only passively involved in the process of music production. Performance is only considered creative when done by a human (d).

"<e1>Alcoholic beverages</e1> that have a lower alcohol content (beer and wine) are produced by <e2>fermentation</e2> of sugar."

Other

Comment: Fermentation is an event and by (f) cannot be a Producer. Alcoholic beverages are concrete substances and cannot be Effects. Besides fermentation is actively involved in producing alcoholic beverages, and thus it cannot be an Origin.

"The survival of spinoff Cray Computer Corp. as a fledgling in the <e1>supercomputer</e1> <e2>business</e2> appears to depend heavily on its chairman Seymour Cray."

Other

Comment: A supercomputer is a tangible concrete object, but "business" refers to the activity of making/selling supercomputers and cannot be a Producer.

"That <e1>man</e1> was building his <e2>home</e2> doing all his own labor. "

Other

Comment: While the sentence refers to the process of building a house, it does not assert that the culmination of the process actually occurred.