

# Relation 5: Theme-Tool

## Definition

Theme-Tool(X, Y) is true for a sentence S that mentions entities X and Y if and only if:

- (1) X and Y appear close in the syntactic structure of S (so for example we do not assign the relation to entities from separate clauses in a composite clause);
- (2) according to common sense, the situation described in S entails the fact that Y (the tool) is (or was) intended (or designed or used) for some kind of action (V-ing, where V is some verb) in which X (the theme) is the thing that is acted upon (the object of the verb V) or the result of the action.

## Definition – restrictions

- (a) X (the theme) should be an object (e.g., "*wine glass*"), an event (e.g., "*concert hall*", "*service charge*"), a state of being (e.g., "*migraine drug*"), an agent ("*alcoholic treatment*", "*artist award*"), or a substance ("*water filtration*").
- (b) Y (the tool) should be an object (e.g., "*migraine drug*", "*concert hall*", "*wine glass*"), an action (e.g., "*service charge*"), an agent ("*military police*", "*heart surgeon*"), or a substance ("*salad oil*").
- (c) Psychological features are not allowed as tools (e.g., "*death wish*"). See note (ii) below for details.
- (d) The theme and tool must be two completely distinct and separate things; they cannot be two different aspects of the same thing; they cannot have a Part-Whole relation (now, in the past, or in the future); they cannot be two instances of the same type of thing.
- (e) If the sentence S contains a term W or strongly implies a term W, such that Theme-Tool(W, Y) is more natural or reasonable (according to common sense) than Theme-Tool(X, Y), then Theme-Tool(X, Y) = "false". See note (iii) below for details.
- (f) If S entails that Y (the tool) is for V-ing (where V is a verb) X (the theme), then it must NOT be the case that X (the theme) is the agent of the action. See note (iv) below for details.
- (g) If S entails that Y (the tool) is for V-ing (where V is a verb) X (the theme), then it must NOT be the case that Y (the tool) is the agent of the action. See note (v) below for details.
- (h) Plans, missions, strategies, advice, proposals, methods, processes, and similar things are not allowed as tools (we might call this class of things "mental tools" or "cognitive tools").
- (i) Requirements, groundwork, foundations, preliminaries, preconditions, and similar things are not allowed as tools for the theme, because they precede the theme (we might call this class of things "preconditions" or "prerequisites").

## Definition – notes

- (i) Regarding (a) and (b) above: The relation applies to both concrete and abstract entities.
- (ii) Regarding (c) above: The preposition "for" in the pattern "Y for X" often signals a Theme-Tool(X, Y) relation ("*glass for wine*", "*hall for concerts*"), but it also signals a relation between a psychological

feature or mental attitude (e.g., "need", "desire", "wish") and its subject matter ("need for gold", "desire for sleep", "wish for happiness"). We do not allow psychological features as tools (e.g., "need" is not a tool for the theme "gold"). Although it might be argued that psychological features are (abstract) actions (and thus satisfy (b)), it would be strange to say that psychological features are "intended" for some kind of action (as required in (2)), although it is true that psychological features motivate actions.

(iii) Regarding (e) above: In the sentence, "Their <e1>plan</e1> for the <e2>night</e2> is to smoke <e3>cigarettes</e3>," Theme-Tool(e2, e1) is more natural than Theme-Tool(e3, e1). Therefore, according to (e), Theme-Tool(e2, e1) = "true" and Theme-Tool(e3, e1) = "false". That is, "their plan is for spending the night", not "their plan is for smoking cigarettes". Although it might be argued that both Theme-Tool(e2, e1) and Theme-Tool(e3, e1) are true, we prefer to say that the less natural alternative is false.

(iv) Regarding (f) above: It means that in active mode X CANNOT be the grammatical subject of the verb V, and in passive voice it CANNOT be introduced with "by".

(v) Regarding (f) and (g) above: It means that in active mode NEITHER X NOR Y can be the grammatical subject of the verb V, and in passive voice it CANNOT be introduced with "by".

## Positive examples

"It has no bearing on our <e1>work</e1> <e2>force</e2> today."  
WordNet(e1) = "n6" WordNet(e2) = "n4" Theme-Tool(e1, e2) = "true"

**Comment:** The force (tool) is intended for doing work (theme). The action is working, the force is a tool for the action, and work is the result of the action.

"The withdrawal of New England Electric might speed up the <e1>reorganization</e1> <e2>process</e2>."  
WordNet(e1) = "n2" WordNet(e2) = "n5" Theme-Tool(e1, e2) = "true"

**Comment:** The process (tool) is intended for reorganization (theme). The action is reorganizing, the process is a tool for the action, and reorganization is the result of the action.

"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."  
WordNet(e1) = "n1" WordNet(e2) = "n2" Theme-Tool(e1, e2) = "true"

**Comment:** The business (tool) is intended for selling supercomputers (theme). The action is selling, the business is a tool for the action, and supercomputers are the object acted upon (the object of the verb "selling"). This could also be seen as a Product-Producer(e1, e2) relation.

"Saudi Arabia has vowed to enact a <e1>copyright</e1> <e2>law</e2> compatible with international standards."  
WordNet(e1) = "n1" WordNet(e2) = "n3" Theme-Tool(e1, e2) = "true"

**Comment:** The law (tool) is intended for defining copyright (theme). The action is defining, the law is a tool for the action, and copyright is the object acted upon (the object of the verb "defining").

"On Tuesday, the judge called a <e1>news</e1> <e2>conference</e2> to say he was quitting."  
WordNet(e1) = "n1" WordNet(e2) = "n1" Theme-Tool(e1, e2) = "true"

**Comment:** The conference (tool) is intended for communicating news (theme). The action is communicating, the conference is a tool for the action, and news is the object acted upon (the object of the verb "communicating").

"Private <e1>construction</e1> <e2>spending</e2> was down, but government building activity was up."

WordNet(e1) = "n5" WordNet(e2) = "n1" Theme-Tool(e1, e2) = "true"

**Comment:** The spending (tool) is intended for financing construction (theme). The action is financing, the spending is a tool for the action, and construction is the object acted upon (the object of the verb "financing").

"He was on the board of an <e1>insurance</e1> <e2>company</e2> with financial problems."

WordNet(e1) = "n2" WordNet(e2) = "n9" Theme-Tool(e1, e2) = "true"

**Comment:** The company (tool) is intended for providing insurance (theme). The action is providing, the company is a tool for the action, and insurance is the object acted upon (the object of the verb "providing").

"Democratic Wilder opened his gubernatorial battle with Republican Coleman with an <e1>abortion</e1> <e2>commercial</e2> that analysts agree was a tour de force."

WordNet(e1) = "n1" WordNet(e2) = "n1" Theme-Tool(e1, e2) = "true"

**Comment:** The commercial (tool) is intended for communicating Wilder's views on abortion (theme). This is an example of metonymy, where "abortion" stands for "a certain attitude towards abortion". The action is communicating, the commercial is a tool for the action, and "a certain attitude towards abortion" is the object acted upon (the object of the verb "communicating"; the commercial communicated a certain attitude towards abortion).

"Legal authorities cranked up an investigation worthy of a <e1>murder</e1> <e2>case</e2>."

WordNet(e1) = "n1" WordNet(e2) = "n20" Theme-Tool(e1, e2) = "true"

**Comment:** The case (tool) is intended for redressing a murder (theme). The action is redressing, the case is a tool for the action, and murder is the object acted upon (the object of the verb "redressing").

"We have developed a <e1>method</e1> for studying the as-grown <e2>defect density spectra</e2> of Czochralski silicon wafers by infrared light scattering tomography."

WordNet(e1) = "n1", WordNet(e2) = "n1", Theme-Tool(e2, e1) = "true", Query = "a \* for \* the"

**Comment:** The method (tool) is intended for studying the defect density spectra (theme). The action is studying, the method is a tool for the action, and the defect density spectra are the objects acted upon (the objects of the verb "studying").

"Sanford's proposed downtown makeover could be a <e1>model</e1> for the <e2>region</e2>"

WordNet(e1) = "n5", WordNet(e2) = "n3", Theme-Tool(e2, e1) = "true", Query = "a \* for the"

**Comment:** The model (tool) is intended for making-over the region (theme). The action is making-over, the model is a tool for the action, and the region is the object acted upon (the object of the verb "making-over").

## Near-miss negative examples

"The next morning, with a <e1>police</e1> <e2>escort</e2>, busloads of executives and their wives raced to the Indianapolis Motor Speedway."

WordNet(e1) = "n1" WordNet(e2) = "n3" Theme-Tool(e1, e2) = "false"

**Comment:** The escort (tool) is not intended for the police (theme). It is for the executives. This sentence does not satisfy (2).

"One <e1>strategy</e1> is to buy put <e2>options</e2>."

WordNet(e1) = "n2" WordNet(e2) = "n1" Theme-Tool(e2, e1) = "false"

**Comment:** The strategy (tool) is not intended for the options (theme). This sentence does not satisfy (2).

"Its <e1>absence</e1> is to blame for the industry's sluggish <e2>development</e2>."

WordNet(e1) = "n3" WordNet(e2) = "n1" Theme-Tool(e2, e1) = "false"

**Comment:** The absence (tool) is not intended for the development (theme). This sentence does not satisfy (2).

"Our <e1>goal</e1> is to give better <e2>education</e2>."

WordNet(e1) = "n2" WordNet(e2) = "n5" Theme-Tool(e2, e1) = "false"

**Comment:** A goal (tool) is a psychological feature. This sentence violates restriction (c).

"The economy remains well-balanced, and the <e1>outlook</e1> is for continued moderate <e2>growth</e2>."

WordNet(e1) = "n2" WordNet(e2) = "n2" Theme-Tool(e2, e1) = "false"

**Comment:** An outlook (tool) is a psychological feature. This sentence violates restriction (c).

"My <e1>wish</e1> was for losing <e2>weight</e2> this year."

WordNet(e1) = "n1" WordNet(e2) = "n6" Theme-Tool(e2, e1) = "false"

**Comment:** A wish (tool) is a psychological feature. This sentence violates restriction (c).

"The <e1>cash</e1> <e2>offer</e2> they received did not cover their losses."

WordNet(e1) = "n2" WordNet(e2) = "n2" Theme-Tool(e1, e2) = "false"

**Comment:** The offer (tool) is not intended for cash (theme). This sentence does not satisfy (2).

"His longer <e1>analysis</e1> is to appear in the <e2>journal</e2> later this year."

WordNet(e1) = "n6" WordNet(e2) = "n2" Theme-Tool(e2, e1) = "false"

**Comment:** The analysis (tool) is not intended for the journal (theme). The journal is a tool, not a theme.

"Their only <e1>hope</e1> is to broadcast raw <e2>sensationalism</e2>."

WordNet(e1) = "n2" WordNet(e2) = "n1" Theme-Tool(e2, e1) = "false"

**Comment:** A hope (tool) is a psychological feature. This sentence violates restriction (c).