
Knowledge representation

Part 1

How to break down information into unitary statements

What is a unitary statement?

1. A unitary statement refers to the smallest *useful* units of knowledge
 2. A unit of knowledge is useful if it can be used in combination with other knowledge in reasoning
 3. Unitary statements contain knowledge that is useful without reference to other unitary statements.
 4. Unitary statements cannot be broken down any further into other unitary statements
 5. Unitary statements must be explicit, not vague
 6. A statement differs from a sentence in that a statement captures an assertion (which may be represented in a variety of ways)
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Non-unitary statement examples

- Rainfall is low
 - Clover is eaten by sheep and goats
 - Soil erosion is caused by a lack of ground cover and heavy rainfall
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Non-unitary statements converted to unitary statements

- Rainfall is low if it is the dry season on the savannah
 - Clover is eaten by sheep
 - Clover is eaten by goats
 - Heavy rainfall causes soil erosion if lack of ground cover
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General and specific statements

- Barley seeds germinate in seven days at 10°C
- Seedling 97 germinated after nine days at 10°C

General statements have much more reasoning, predictive, power.

Farmers often talk about particular instances – i.e. specific knowledge. This is sometimes just a way of talking, but it can be used to add validity to a more general assertion.

Recording the context of a statement - (IF)

- Soil erosion is severe
 - IF: The land is greater than 20° slope AND rainfall is over 1000 mm per annum AND ground cover is thin
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FIRST EXERCISE

- Read the extract from an interview with a farmer in Kenya and try to make unitary statements from the first paragraph
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SECOND EXERCISE

- Look at the 10 sentences in the second handout and decide which are unitary statements and which are not
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