

# Orion Design Note

## Link between Noun and Relation

We can link a noun to a relation through an ALTERNATIVES operator, but what does it mean?

A noun can refer to:

- The process
- The end result
- The relation subject
- The relation object
- The state of having been operated on by the relation

## Examples

The build will take three hours (the process of building)

We installed the latest build last week (end result)

He is a snoop (relation subject – he snoops)

She had a snoop around (process)

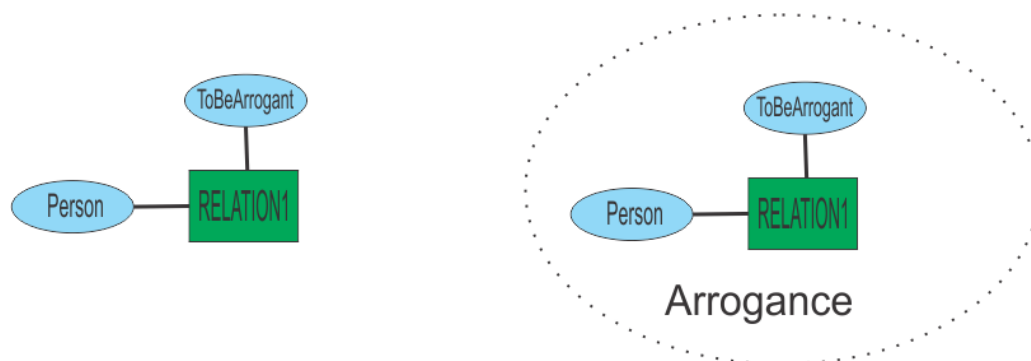
His stupefaction was complete (he had been stupefied – a state of being)

The contaminant (relation subject – it contaminates)

The employee (relation object)

If we directly link the noun through an ALTERNATIVES to the relation, we get the noun becoming a BaseRelation and StateRelation, which is not correct. We need to distance the noun so inheritance doesn't work.

A person (or a design) is arrogant – arrogance is the state of being arrogant. How do we link that?



We can link to the relation, and to the subject of that relation. How do we link to the combination of the subject and the relation? We have been assuming that, if we link to the relation node, we capture the whole structure. But the relation node is itself a child of a relation, so there is a discontinuity.

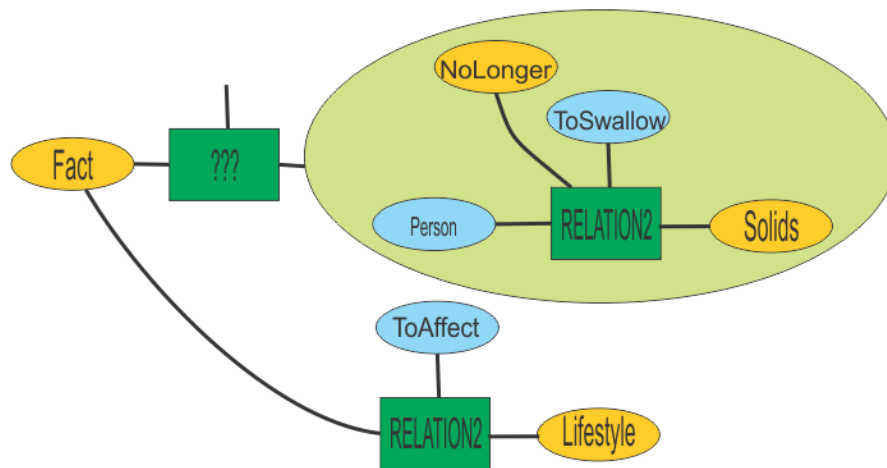
It might be better to say that “arrogance” is the mental state of the person who is arrogant, and we use something like a SYNONYMMAP to make the link.

We already know that ToBeArrogant is a MentalStateRelation, so ToBeArrogant is operating on the mental state of the person.

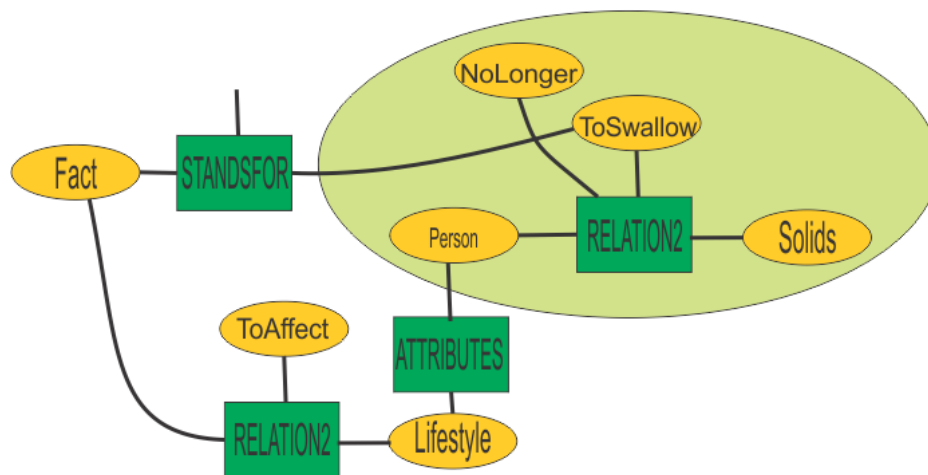
A different example:

The fact that he is no longer able to swallow solids is affecting his lifestyle.

What does “fact” and its connections look like?



We can introduce a new operator – STANDSFOR.

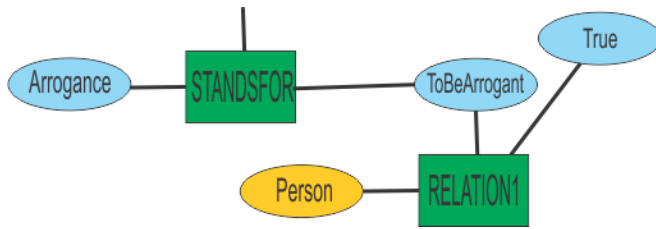


This operator is directional – one can move from Fact to ToSwallow, but not vice versa.

This operator is not hierarchical – no parent information is passed in either direction.

What the operator does allow is the ability to move to a new point, and then observe the relational and hierarchical connections around that point. One can find the parent of ToSwallow to find out what it means.

Some connections cross from one space to the other – the person who cannot swallow, and their lifestyle.



Is this a reasonable description of what arrogance is? It requires:

- A person
- A mental state
- A logical, either forever or with a time period

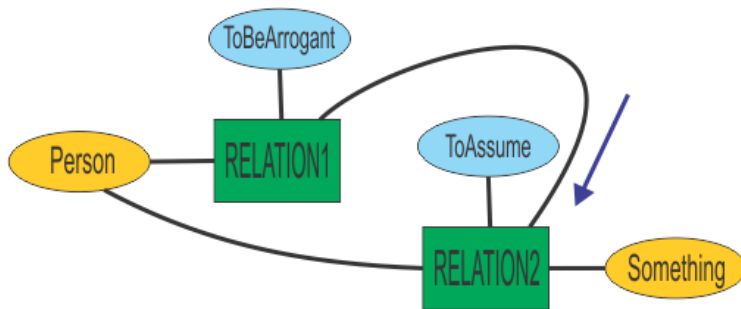
Does it require an action?

adjective. Having or revealing an exaggerated sense of one's own importance or abilities. 'he's **arrogant** and opinionated'

No, having is enough.

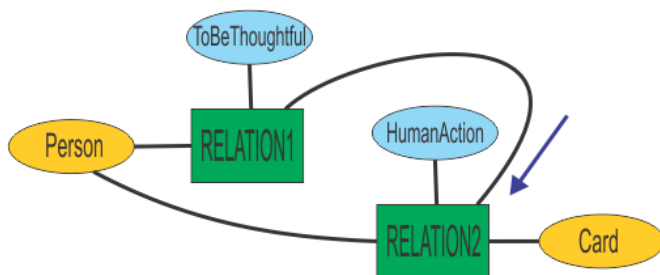
What about an arrogant assumption? This is an assumption made by an arrogant person. But an arrogant person may make many assumptions that are not arrogant – the sun will rise tomorrow. What is special about an “arrogant assumption”? The assumption was made while their arrogance was active. How do we show that?

The person was being arrogant when they assumed ...



An Arrogant Assumption

### The Card Was Thoughtful



The Card Was Thoughtful

A card can't be thoughtful, but we can assume there was human action involved, such as buying, writing in or sending it, which was thoughtful.

We can't take subject and object of a relation literally – we need to assume other agency. This is going to be a problem when determining a meaning among many meanings – “run” with its 74 meanings, for example.

## STANDSFOR

We have the problem of handling the pointing of a single object to an object made up of many pieces. This problem can occur both in definitions and normal text.

Normal text:

The patient can no longer swallow solids.

This is causing him some discomfort.

How do we connect “this” with “The patient can no longer swallow solids”?

We can use a STANDSFOR (short form of ToStandFor) to connect “this” with, say, the relation “swallow”, and ring-fence it with PARENT operators, so it is clear where the boundaries lie.

But then we add another statement

The patient has a job in marketing.

The patient can no longer swallow solids.

This is causing him some discomfort.

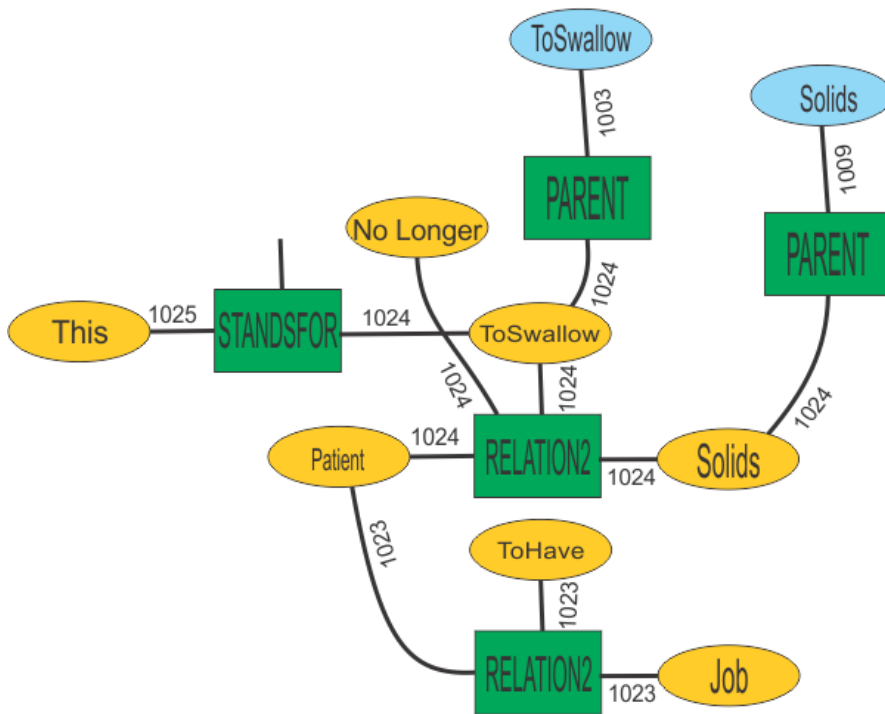
How do we prevent “marketing” from becoming part of “this”?

It may be easier to be strict about defining the extent of statements by using origin in links to determine the extent, then using a pointer to a single origin object.

Statement	Origin
The patient has a job in marketing.	1023
The patient can no longer swallow solids.	1024
This is causing him some discomfort.	1025

“This” then points to an object which has only links with origin 1024, which automatically allows connection to everything in the statement, and nothing else, while “him” points to “the patient” in the previous statement.

What does pointing to an origin look like?



(the link out of the STANDSFOR is built in the 1025 environment, but the STANDSFOR operator changes it to the linked environment)

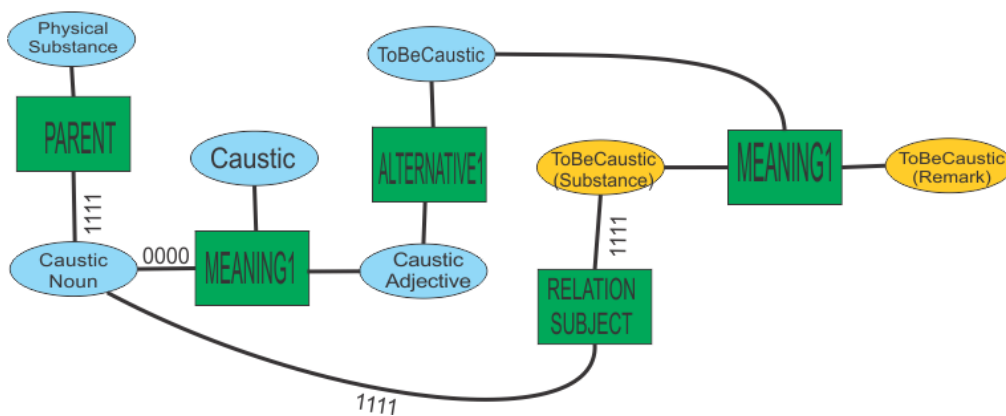
This has the right sort of associative “cloud” feeling about it, with a clear boundary (if the link origin isn’t 1024, you can’t go there).

The operator allows us to change context, or in this case, to expand the context by adding other contexts.

Some definitions are too simple to need a STANDSFOR operator.

This is fully defined, but expensive in terms of elements.

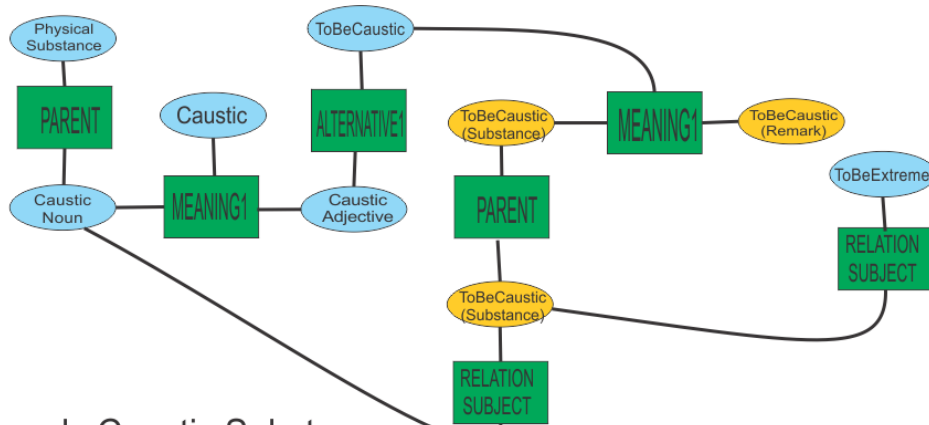
Where the logical connections to an operator will be unconditionally true, we can use a simpler structure – RELATIONSUBJECT and RELATIONOBJECT operators. A pruned version:



Here RELATIONSUBJECT is part of the fence, unless its subject also has a RELATIONSUBJECT, and no STANDSFOR operator is necessary.

This version uses twelve fewer elements (as long as RELATIONSUBJECT is oriented correctly).

What about “extremely caustic substance”?



Extremely Caustic Substance

Going back from CausticNoun, it is a RELATIONSUBJECT of a child of ToBeCaustic, which is itself a RELATIONSUBJECT of ToBeExtreme (where the adverb “extremely” ends up).

## Larger Pointings

We will need to be able to point to larger assemblies than just sentences:

The methods discussed in Chapter 11 should only be used in extreme circumstances.

We have to go to Chapter 11 and find all the methods.