

Dear Ed,

Thank you very much for your messages and a new introduction to OAF.

Today I was out full day and have just read your article and message tonight, and am thinking over them.

(1) Your introductory article is nice to understand your principal motive of research. Simplification, generification, and unification are all important direction for us to understand the essence of anything.

Our knowledge and human culture always have the repeating movements of divergence/complication and then convergence/simplification.

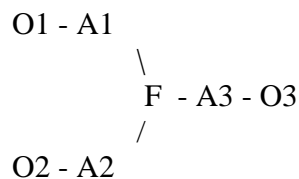
Without simplification, any person and any culture can not be understandable and operable.

Dear Toru,

(I feel my motive in research is also this sense of simplification: USIT Operators, Six-Box Scheme, and CrePS are all for simplifying/unifying the divergent complex TRIZ methodology.)

(2) The definition and how to write the OAF are not clear in the article, I feel.

(a) We would like to have your basic diagram first.



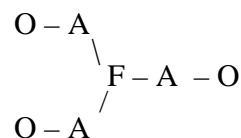
And please explain what are Os, As, and F.

(b) Your sentence in 5. expresses the intention, 'What is expressed in an OAF'.

" Two objects in contact at a point have an active attribute (each)

A possible difference is my emphasis on reduction to first principles. Those may not be obvious in the developing a new methodology. Consequently, experiments may be necessary to discover them. That's what I'm searching now. I'm looking at principles first and will consider pedagogy later.

(2) An OAF diagram illustrates the relationship between two objects, Os, at a point of contact, having one atttribute each, As, in support of a desired function, F. Being a desired function the diagram illustrates an as designed arrangement.



The same diagram is used to describe a problem by changing F to ~~F~~ where the strikethrough indicates a malfunction. In this case, the As are thought of as plausibly causal attributes.

Distinguishing objects with subscripts is not needed. What is more important is to have in mind a specific sentence to recite as you construct an OAF diagram. I use: "Two objects in contact at a point have one attribute each that maintain or alters the attribute of another object." Distinction is taken care of when specific words are used for the letters.

Now you see the flexibility of an OAF diagram.

which, together, support an unwanted effect that modifies or sustains an attribute of an object. "

Here you mention the case of an unwanted effect only, but you actually use OAF for expressing the original designer's intention and possible solution concepts.

(c) You recommend to use nouns for O, adjectives for A, and infinitives for F.

But your examples do not follow this recommendation.

(d) We would like to learn several examples of pairs of 'What you want to express' and

'How you express it'.

Furthermore it can be used for 2 or even 1 object. Don't worry about this until you meet up with a problem that needs only two or one object. It then will be obvious how to proceed.

As you mentally construct an OAF diagram, and are selecting interacting objects, the mind is analyzing the problem. This is when you become aware of active and inactive attributes.

Note that 'point of contact' is a metaphor and not necessarily a physical point. When the objects are homogeneous in the attributes of interest, it greatly simplifies one's thinking to reduce them to a point.

Furthermore, at this point the objects may have multiple attributes that are active and others that are not. These are resources for thinking about the problem and its possible solution concepts. Picking them in pairs allows focusing on a smaller set of variables. Some pairs will be useful others will turn out not to be. 'Turning on' unused attributes is a powerful thought process for finding creative ideas.

(c) Yes 'recommend', not insist on. All of USIT, HI, and the heuristics that I use and develop are designed to be aids to thinking, not rigorous requirements. Such aids are adjustable for voicing in a problem-solver's preferable language and way of thinking. This included suggested parts of speech. The latter is very useful in first learning OAF diagrams when one is stuck trying to find an effective wording.

Often I type as I am problem solving and may forget to check on semantic details.

(d) What to express is a problem statement boiled down to one contact between two objects. It is taught in the beginning of USIT how to minimize the number of objects in a problem statement. The OAF diagram limits one to 3, 2, or 1 object depending on where active and inactive attributes may reside.

Express it as: "Two objects in contact at a point have one attribute each that maintain or alters the attribute of another object." – or similar wording.

(3) Your explanation on how to build OAF and how to use it is illustrative.

One point difficult for us is  
'3. Identify all attributes of each object ' and  
'4. Select pairs of attributes, '

We are apt to try to identify 'a correct pair of attributes'  
and are rather puzzled to see your choice is different.

(4) In your USIT textbook, you show tables (or chains) of OAF statements among all the relevant objects.

In those years (and still now), people were advised to draw functional diagrams in a complicated way in TRIZ.

So I thought promoting the functional diagram in the USIT manner was more important than OAF.

Recently you use OAF only at the focal point of the problem.  
I agree with your choice.

(5) I am very glad to learn that you are coming to ETRIA TFC 2015 and presenting a paper.

I am very much looking forward to seeing you there and to learn your new paper.

Best wishes,

Toru

Making lists of attributes dates to early USIT. Assuming a student has had exposure to this procedure it isn't necessary to go into the tedium of making written lists. Since you only think about one attribute pair at a time, you can select them as they come to mind and try them. In selecting two active and causal attributes you are already analyzing the problem. It may be possible to find an unused (inactive) attribute to replace an active and causal one for a solution concept.

Don't worry about 'correct' pairs. Select an active attribute of either object. Then, you sort through individual attributes of the other object to complete a causal pair or to suggest a solution concept.

It may helpful to think first of what attributes of contacting objects were necessary in the original design. Now identify any of those that contribute to the problem.

(4) Reducing all of USIT to a single OAF diagram is the latest stage of my thinking about the essentials of what OAF accomplishes – i.e., how it contributes to finding solution concepts.

Those days were more complex. I think this reduction of USIT to a single graphic heuristic is all an experienced problem solver – one familiar with some kind of structured problem solving methodology – needs.

(5) And I am glad that you will be there too. I look forward to some insightful discussions.

U-SIT and think with OAF.

Ed