

3 Caps of Annalisa

{slide=The 3 caps of Annalisa}Annalisa’s

main task is to help determine the best thing to do... the best course of action…the best decision. But she can also help with two judgment tasks (valuation and prediction). It is important to distinguish these three tasks and we can think of her wearing different caps depending on the task.

D(ecision) Cap for making Decisions which reflect both [[Preferences]] and [[Beliefs]]

P (reference) Cap for establishing Preferences (Valuations) in form of desirabilities

B (elief) Cap for establishing Beliefs (Knowledge, Evidence) in form of probabilities

To emphasise that Decisions represent the merging of Beliefs and Preferences the D Cap is Green, the colour that results when we combine Yellow (B Cap) and Blue (P Cap){/slide}{slide= The D cap }Wearing her Decision cap she addresses the choice task: which is the best of this set of possible actions - and how do the other possible actions compare with it?

In this case the Options are possible actions, such as treatments for a medical condition (e.g. surgery, chemotherapy, watchful waiting).

A decision requires specifying some overall goal (such as Health or Quality of Life) and this overall goal will usually have several aspects or Attributes (e.g. mobility, pain, mood). The overall goal is the thing to be maximised, so it is sometimes called the ‘maximand’.

In the D task

the Ratings in Annalisa represent the relationship between each Option and each Attribute, e.g. how surgery will affect mobility, pain and mood; how chemotherapy will affect mobility, pain and mood; and so on. The ratings will often be probabilities

the Weightings in Annalisa represent the relative desirability of the Attributes: how important are mobility, pain and mood in relation to each other. Note that this has nothing to do with the Ratings of the Options in relation to these Attributes

the Scores in Annalisa represent the overall worth of each Option in maximising the overall goal (e.g. Health), and are calculated by applying the Weightings to the Ratings

The majority of examples on the cafe site are D-Annalisas. For example:

Prostate screening at <http://www.cafeannalisa.org.uk/content/view/89/9/>

Family Planning at <http://www.cafeannalisa.org.uk/content/view/23/9/>

The other two tasks that Annalisa can address are best thought of as sub-tasks of the Decision task, relating to the two inputs needed for a decision – the probabilities and the desirabilities or, as we will often call them, the beliefs and the preferences. However, these tasks can be tackled outside any immediate Decision context, or separately from it, as well as part of it{/slide}{slide=The P cap}Wearing her Preference cap Annalisa addresses the value judgment task: which of these (multi-attribute) things is most preferred/highly valued and how do the others compare with it?

In this case the Options are things (persons, objects, events...) being scored in relation to an overall goal, NOT actions in relation to them.

For example: we want to establish which of a set of patients/people has the best ‘Health’ or ‘Quality of Life’ and to be able to score each of the set on a Health or Quality of Life scale. Each of these overall goals has multiple aspects/attributes, such as mobility, pain and mood in the case of Health. Establishing the value placed on the overall state made up of such multiple aspects/attributes is the P-cap task.

Actually, in the P-task the Weightings are the same as in the D-task, in that they represent the relative desirability of the attributes that characterise the overall state, e.g. how un/desirable mobility, pain and mood are in relation to each other. The difference between the D task and P task therefore relates to the Options and Ratings.

The Options are the different things (e.g. patients A and B) to be scored in relation to the overall goal (e.g. Health). The Ratings for an Option represent the relationship between the thing (person, object, event,…) and each individual attribute. For example, patient A’s Ratings will embody his/her moderate mobility and mood problems but absence of pain problems (either now or in some future scenario), whereas patient B’s Ratings will reflect the fact that he/she has no mobility or mood problems but does have moderate pain problems (either now or in some future scenario).

Of course the P-task may also be used to score just one person or object. See, for example, the scoring of someone on SEIQOL, where the individual person specifies the attributes that are important to them, rates themselves on those attributes and finally specifies the weights to produce a self-scored Quality of Life assessment.

<http://www.cafeannalisa.org.uk/content/view/30>

Chapman, Elstein et al provide another example of a P-task in connection with prostate cancer treatments and the multiple outcomes that may result.

<http://www.cafeannalisa.org.uk/content/view/38>

However, note that we have used their P-task results (average weightings for a sample of patients) as inputs into a D-Annalisa{/slide}{slide=The B cap}Wearing her Belief cap Annalisa addresses the predictive judgment task: which of this set of possibilities is most likely to be the case - either the case now, or in the future- and how do the other possibilities compare in probability?

In this case the Options are again things (persons, objects, events,…), NOT actions. And, as in the P-task the Ratings for an Option represent the relationship between the thing (person, object, event,…) and each individual attribute. But this time Weightings are very different from what they were in the P and D-tasks.

An example of a B-Annalisa is the evaluation of a set of houses by their Vulnerability to Burglary. Vulnerability to Burglary

is the overall characteristic to be assessed for each house in the set and we can translate this into the probability of each house being burgled.

<http://www.cafeannalisa.org.uk/content/view/91>

The Ratings of the houses (the Options) indicate the degree to which it is believed each house possesses the various characteristics (Attributes) that contribute to overall Vulnerability (e.g. how visible is it from the road)

The Weightings represent the connection believed to exist between each characteristic and Vulnerability (e.g. visibility from road and probability of being burgled.). It is vital to see that in the B-case these Weightings are belief judgments not value judgments. They do not (or should not) reflect the preferences of anyone about the set of characteristics of the houses, or about Vulnerability as opposed to any other attribute of a house. As predictive probabilities they may be based on empirical evidence about what sorts of houses are most burgled, or on expert judgments (including by expert burglars) of that relationship. But either way they are belief judgments not value judgments.

Take another B-Annalisa, this time one seeking to establish the most likely diagnosis (Option), given a set of symptoms (Attributes). In this case the Weightings will be the extent to which the patient displays each of the symptoms (Attributes) and the Ratings for each diagnosis (Option) will represent the relationship between that diagnosis and that Attribute.

To summarise: in both P- and D-Annalisas the Weightings represent value judgments about the Attributes. In B-Annalisas they represent the (probabilistic. predictive) association between the Attribute and the overall state.{/slide}