

Enthymemes and Argumentation Schemes in Health Product Ads

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Abstract

This paper applies argument visualization tools to selected examples of health product commercial ads to work up analyses that reveal interesting aspects of the structure of arguments used in the ads. It is part of ongoing research on identifying argumentation schemes in natural language discourse. It shows how argumentation mapping tools can be used to bring out interesting features of real examples of arguments designed to persuade a target audience/readership for commercial purposes. It shows how such structures can be elicited by revealing implicit assumptions, argumentation schemes, and in some instances, questionable inferences. It shows that practical reasoning is the central argumentation scheme around which the persuasive argumentation in these ads is built.

Health product ads, like commercials for drugs, other medications and health foods, typically use arguments of a kind that are easily recognizable as fitting structures of kinds known in argumentation studies. Structures commonly found in the examples are argumentation schemes, standardized forms of reasoning representing stereotypical kinds of arguments (Walton, Reed and Macagno, 2008) and enthymemes, arguments with implicit premises or conclusions (Walton and Reed, 2005; Walton, 2008). The aim of this project was to collect a corpus of such ads, mainly from *Newsweek* magazine, and analyze the structure of the arguments used in them by applying the argument mapping tool Araucaria. The aims of the project were (1) to collect examples of short texts of commercial ads for drugs, herbal products or foods that claim to have health benefits, (2) to identify argumentation structures used in the ads, and (3) to analyze the arguments in the ads using tools recently furnished by argumentation theory and computing. In this research report, some illustrative examples of how the ads are analyzed are presented, and some conclusions about the analyses and other findings are drawn. The project fits with recent work using argumentation schemes and computational tools to identify and analyze types of arguments found in natural language discourse (Moens et al., 2007).

The project collected and analyzed sixty-three examples of arguments from health product ads and used the visualiza-

tion tool Araucaria to display their argumentation structure. An argument diagram displaying schemes and enthymemes identified in each example were drawn up, and special features and problems arising from each example were briefly discussed.

Ruth E. Lowe, a graduate student, collected the data, under a project funded by the Social Sciences and Humanities Research Council of Canada. She supplied the following statistics. Of the arguments surveyed, 14 of the 63 articles were features rather than (explicit) advertising. Of the 49 ads, 39 directly appealed to practical reasoning by defining a goal that can be achieved by using that product. Each ad in the database was for distinct product, so there weren't any repeats. Some of the interesting statistics are as follows. The *Newsweek* issue of January 21, 2008, at a total of 86 pages, had the highest amount of space devoted to health ads of all the issues studied. The total number of health ads based on practical reasoning in this issue was 11. The list of topics included healthy diet (milk, almonds and oatmeal, and medications), and medications (pain relief, blood clots, weight loss, heartburn, cholesterol, antidepressants and sleep aids). The issue of April 21, 2008 featured a spring health insert consisting of a 22 page advertisement. The insert featured several different health issues from asthma to diabetes. Despite the heading *advertisement* appearing on most pages of the insert, the articles presented a general appearance of having been written by unbiased journalists. However, the reasoning exhibited a bias promoting the drug described on the adjacent page. The reader is told how to think about a particular health problem, and the ad offers a solution for the problem that has been defined. In the April 21 issue, the total number of advertisement articles employing practical reasoning was 7. The total number of ads over and above the advertisement articles employing practical reasoning was 8.

Ruth made records of the arguments and marked them up, showing their premises and conclusions, and which argumentation schemes they fitted. We both made up some argument diagrams of the examples independently of each other, but as one would expect, the diagrams do not always agree in every respect. Generally however, we did tend to agree on which arguments fitted which schemes, and this identification of the types of arguments used in the ads seems to be the most valuable data coming out of the project.

1 Background

In argumentation studies, arguments are identified, analyzed and evaluated by means of argumentation schemes. One common scheme is that for argument from expert opinion, where the scheme roughly says: an expert says statement A is true, therefore A is true. A scheme is a form of argument (normative) that can be applied to a particular argument in a given text of discourse, revealing the structure of the argument. The most interesting schemes in current research are defeasible ones that represent plausible reasoning, rather than deductive or inductive reasoning. Each scheme has a special set of critical questions matching it. An argument is evaluated using the critical questions in relation to the scheme. The argument holds as plausible unless critically questioned or attacked by an opposing argument, or by the asking of a critical question. There are different ways different critical questions attack an argument fitting a scheme, but basically the critical questions raise doubts.

(Walton and Reed, 2005) showed how argumentation schemes representing forms of commonly used defeasible types of arguments can be applied to an argument found in a text of discourse, and used to reveal implicit premises needed to make the argument fit the requirements of the scheme. An enthymeme is an incomplete argument found in a text of discourse. More precisely, an argument of the kind found in a text of discourse can be described as having a set of premises and a conclusion, but in many instances, some of the premises or even the conclusion may not be explicitly stated. In cases where you need to add in an implicit premise, or even make the conclusion explicit, the argument is called an enthymeme. For example, you need to insert the premise 'Socrates is a man' to make the argument 'All men are mortal, therefore Socrates is mortal' valid. But there is a problem (Burke, 1985; Gough and Tindale, 1985; Hitchcock, 1985). If the analyst is allowed to fill in any proposition needed to make such an inference valid, he or she may be inserting assumptions into the text of discourse that the speaker did not mean to be part of his or her argument. There is even the danger of committing the straw man fallacy, the fallacy attributing an implicit premise or conclusion to an opponent's argument that exaggerates or distorts the argument in order to make it easier to refute (Scriven, 1976, pp. 85-86). However, new methods of reconstructing enthymemes (Walton, 2007) have been shown to be useful in contending with this danger.

One required component of the new method is the use of visualization tools that can be used to help analyze an argument and that have argumentation schemes as part of the tool. Araucaria is a software tool for analyzing arguments, available free here (November 1, 2007): <http://araucaria.computing.dundee.ac.uk/>. This software aids a user in reconstructing and diagramming an argument using a simple point-and-click interface. It also supports argumentation schemes, and provides sets of schemes from which a user can select a scheme and apply it to a given argument. By this means, schemes can be used as part of the technique for analyzing an argument, and for displaying its structure in a visual form. Such an argument visualization tool can be useful for many purposes. It can

be used to summarize an argument, or as a device to help explain its inner workings.

We begin with a fairly simple example, to show how an argumentation scheme can be applied to an argument in an ad and used to analyze the argument and work up a visualization displaying the argumentation in the ad.

2 The Lunesta Sleep Medication Example

This example is part of a lengthier chain of argumentation in an ad for the Lunesta sleep medication that appeared on the back cover of *Newsweek*, October 8, 2007. The picture in the ad showed the head and shoulders of a young man asleep, his head resting against the pillow. On his shoulder a fluorescent butterfly was depicted. In large print above the picture, the words "The sleep you've been dreaming of." were printed. Below the picture in smaller print, but also in capital letters the expression, "Soothing Rest for Mind and Body." appeared. Just below that, the message containing the main argument of the ad appears. The text printed as the example below comprises most of the argument, but two sentences just after the part quoted have been deleted.

It's what you've been craving. Peaceful sleep without a struggle. That's what Lunesta is all about: helping most people fall asleep quickly, and stay asleep all through the night.

It is easy to see that this text presents an argument directed towards getting the readers of the ad to buy Lunesta. However, it may be a little harder at first to see what the premises are that are put forward to support this conclusion, and what the form of the argument is. The argument evidently has some sort of structure, but it may not be apparent what that structure is. We begin by making a so-called key list of the statements that make up the explicit premises and conclusion of the argument.

Premise: my goal is to have peaceful sleep without a struggle.

Premise: taking Lunesta is the best means to have peaceful sleep without a struggle.

Premise: Lunesta helps most people fall asleep quickly.

Premise: they stay asleep all through the night.

When stated in this way, the argument can be analyzed as having the form of the argumentation scheme called practical reasoning. This scheme represents goal-directed reasoning of the following sort: I have a goal; this action is a means to help fulfill the goal; therefore I should carry out this action. There are three basic components of this scheme. One premise describes an agent's goal. A second premise describes an action that the agent could carry out and that would be a means to accomplish the goal. The third component is the conclusion of the inference telling us that the agent should carry out this action.

In the scheme below, the first-person pronoun 'I' represents a rational agent of the kind described by Woodridge (2000), an entity that has goals, some (though possibly incomplete) knowledge of its circumstances, and the capability of acting to alter those circumstances and to perceive (some of) the consequences of so acting. The simplest form of practical reasoning is called practical inference. Below is the

scheme for practical inference (Walton, Reed and Macagno, 2008, 323).

MAJOR PREMISE: I have a goal *G*.

MINOR PREMISE: Carrying out this action *A* is a means to realize *G*.

CONCLUSION: Therefore, I ought (practically speaking) to carry out this action *A*.

Below is the set of critical questions matching the scheme for practical inference (Walton, Reed and Macagno, 2008, 323).

- CQ*₁ What other goals do I have that should be considered that might conflict with *G*?
- CQ*₂ What alternative actions to my bringing about *A* that would also bring about *G* should be considered?
- CQ*₃ Among bringing about *A* and these alternative actions, which is arguably the most efficient?
- CQ*₄ What grounds are there for arguing that it is practically possible for me to bring about *A*?
- CQ*₅ What consequences of my bringing about *A* should also be taken into account?

The last critical question, *CQ*₅, is very often called the side effects question. It concerns potential negative consequences of a proposed course of actions. Just asking about consequences of a course of action being contemplated could be enough to cast an argument based on practical reasoning into doubt. The basic scheme for practical reasoning is instrumental, but a value-based scheme is also formulated by Atkinson, Bench-Capon and McBurney (2006).

Now we can analyze the argument in the Lunesta example by applying the scheme for practical reasoning to the statements in the key list. However, the main problem is that the conclusion does not appear to be stated explicitly in the given text. However, since the argument is part of an ad, we can reasonably take it that the purpose of the ad is to persuade the readership that taking Lunesta would be a good thing (from a prudential viewpoint) for them to do. The purpose of the ad is to sell product, and it looks like the argument is directed to this sort of conclusion. Hence in the analysis shown in figure 1, we have inserted the conclusion as the implicit statement ‘I should take Lunesta’. In figure 1, we can see how the two explicit premises are linked together, based on the scheme for practical reasoning, and work together to support the conclusion. The conclusion is displayed in a text box with a dashed border, indication that the statement in the box is implicit. The remaining two statements, at the bottom of figure 1, are depicted as providing two individual reasons, each of which stands on its own to support the statement above it, ‘Taking Lunesta is the best means to have peaceful sleep without a struggle’. It is interesting to note that the implicit statement in this case is the conclusion, as contrasted with the more usual sort of case in which the implicit statement is one of the premises.

The Lunesta example is relatively simple, and represents a common kind of argument structure found in commercial ads for drugs, herbal products or foods that claim to have health benefits, except that in the normal case it is more likely to be one of the premises in the argument rather than the con-

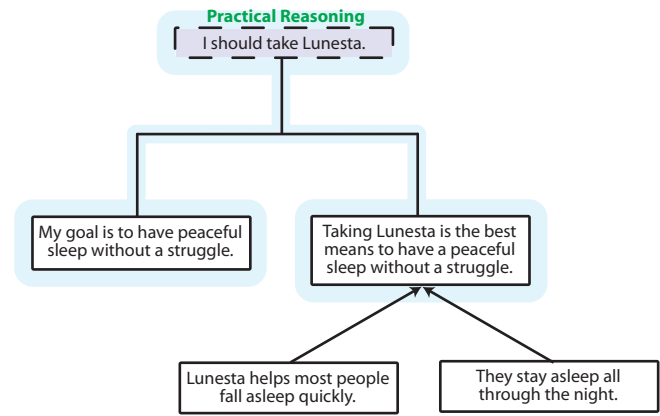


Figure 1: *Araucaria* Visualization of the Argument in the Lunesta Example

clusion that is implicit. We now turn brief mention of some other examples that are slightly more complex, and that raise interesting issues.

3 A Range of Other Examples

An ad for Mucinex shows a large character fashioned from what appears to be mucus (*Newsweek*, February 18, 2008, 5). The text under the visual reads, “When mucus gives you major congestion, you need a major mucus fighter, new maximum strength Mucinex. Just one pill has the most mucus fighting medicine available, to break up and loosen congestion for a full 12 hours. In fact, it’s the longest lasting nonprescription chest congestion medication you can buy. So when maximum mucus happens to you, overpower it with maximum strength Mucinex”. The basic argument in this ad can be put in the form of practical reasoning as follows: my goal is to reduce congestion by reducing the amount of mucus in my chest; taking maximum strength Mucinex is a means to realize this goal; therefore I should take maximum strength Mucinex. Another interesting aspect of the argumentation in the ad is that it mentions the claim that the product breaks up and loosens congestion for a full 12 hours. Then it states that the product is the longest lasting non-prescription chest congestion medication you can buy. This claim answers one of the critical questions matching the scheme for practical reasoning, namely the question of what alternative actions to the one being considered would also bring about the goal. It would very likely be known to both the reader of the ad and those who crafted it that there are competing products available that claim to achieve the same goal. So the consumer who reads the ad has a choice between different means of carrying out the goal, buying this product or buying some competing product. This ad displays the interesting strategy of proleptic argumentation, the technique of putting forward an argument containing a reply to an objection even before the objection is made by the respondent is the argument. Proleptic argument amounts to making two moves at one turn in a sequence of dialog. In this instance, the argument based on practical reasoning is put forward in such a way that it

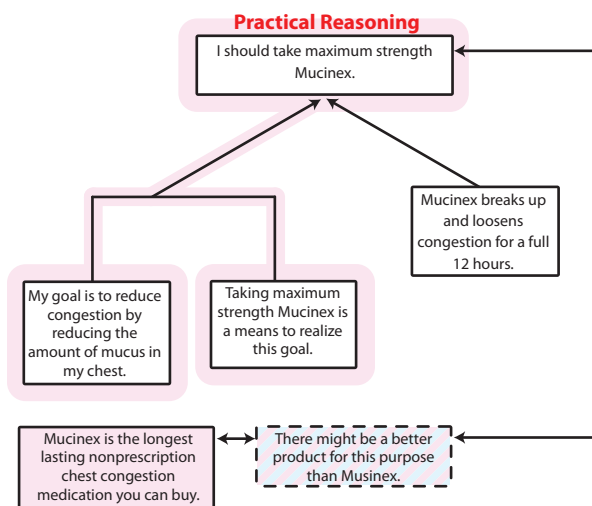


Figure 2: Using Refutation to Represent Answering a Critical Question

contains a reply to one of the critical questions matching the scheme.

It was stated above in the ACTOS example that critical questioning cannot be represented on the diagram, but there is a qualification to be made on this claim. It can be represented to some extent through the device of refutation. Let's return to the Mucinex example to show how using figure 2. The basic Mucinex argument is shown on the left as an instance of practical reasoning. The statement in the darkened box with the dotted border is shown joined to the practical reasoning argument by a double arrow. The double arrow stands for what is called refutation in Araucaria, which is supposed to be like negation. The statement in this text box, stating that there might be a better product for this purpose than Mucinex, operates like the asking of a critical question matching the practical reasoning argumentation scheme, namely the critical question of what alternative actions to the one being considered would also bring about the goal. Hence the device of refutation does allow us to express the notion of a critical question being asked in response to an argument matching a particular scheme. However, Araucaria treats the refutation as being a statement, and no distinction is drawn between making a statement and asking the question. Then the statement which appears in the leftmost darkened box, stating that Mucinex is the longest lasting non-prescription chest congestion medication you can buy, is drawn as a refutation of the refutation that appears to its right. This example illustrates the refutation of refutation, in other words.

An ad for ACTOS, a medication for diabetes (*Newseek*, Nov. 26, 2007, 25) has the headline: "ACTOS has been shown to lower blood sugar without increasing the risk of having a heart attack or stroke". The ad presents ACTOS as a way for the reader who has type 2 diabetes to solve the problem of lowering his/her blood sugar. It expresses this sort of argument: "you have the goal of lowering your blood sugar; taking ACTOS is a means to realize this goal; therefore you

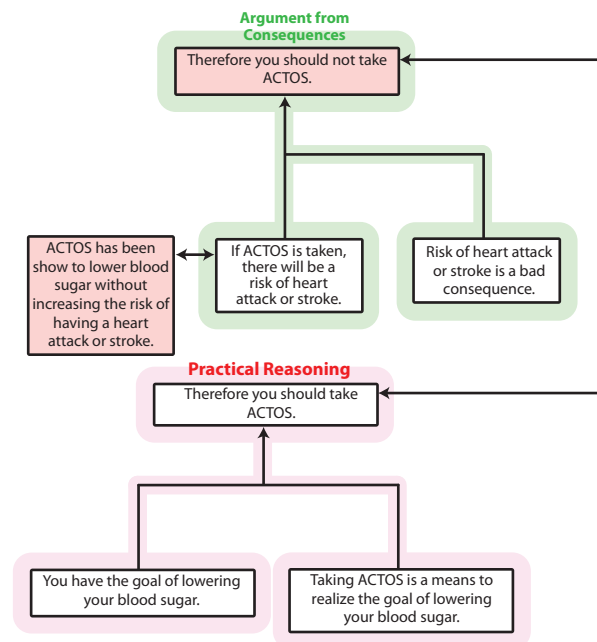


Figure 3: Argument Diagram for the ACTOS Example

should take ACTOS". The ad also responds to critical questions proleptically (in advance of their being put forward), by including a response to CQ_5 to the effect that the negative consequences of increasing the risk of heart attack or stroke will not occur.

Critical questioning cannot be represented on the diagram, but the potential rebuttal could be diagrammed as a pair of arguments fitting the scheme for argument from negative consequences. Argument from negative consequences is a form of rebuttal that cites the consequences of a proposed course of action as a reason against taking that course of action. The argumentation scheme for arguments from negative consequences from (Walton, Reed and Macagno, 332) is shown below.

PREMISE: If A is brought about, then bad consequences will occur.

CONCLUSION: Therefore A should not be brought about.

This scheme also has a positive form, in which the alleged positive consequences of an action are cited as a reason for carrying out the action.

An argument diagram showing how the proleptic argumentation in the ACTOS example works is presented in figure 3. The basic practical reasoning structure of the argument is shown on the right, displaying the argumentation scheme for practical reasoning as applied to the argument. The statement "Therefore you should not take ACTOS" is displayed on the left in a darkened box, indicating that it is what is called a refutation in Araucaria. Refutation is something like negation, indicated in Araucaria by a double headed arrow. The refutation is supported by argument from consequences, as shown on the left. What is also shown is that the premise "If

ACTOS is taken there will be a risk of heart attack or stroke' is itself refuted by another claim. This is shown by the statement in the darkened box at the lower left of figure 2, even though the double headed arrow is very short in this instance.

Argumentation from negative consequences is extremely common in the *Newsweek* ads where it is used to cite possible side effects of a medication, or as in the ACTOS example, to argue proleptically. Some of the ads deal at great length with possible side effects of taking the medication advertised.

For example, an ad for Caduet (*Newsweek*, December 29, 2008, 29), a drug promoted as a one pill that reduces both high blood pressure and high cholesterol, offers many details concerning side effects. In a section entitled Possible Side Effects of Caduet, it lists headache, constipation, swelling of the legs or ankles, gas, feeling dizzy, and upset stomach and stomach pain. It also mentions unexplained muscle weakness, nausea, vomiting, brown or dark colored urine, feeling more tired than usual, and the skin and whites of your eyes turning yellow.

The next ad shows a picture of a woman, and beneath that it says, "I have poor leg circulation. And I have a good reason to try to reduce the risk of heart attack or stroke that comes with it". Further below, more argumentation is presented.

Peripheral artery disease (PAD) is often described as poor leg circulation, which puts you at the double risk of heart attack or stroke. That's because, if you have poor blood circulation in your legs, you may also have it in your heart and brain. You may feel nothing, but the most common system symptom of PAD is pain or heaviness in the legs. Take the next step. So if you're diagnosed with PAD, ask your doctor about a treatment clinically proven to help reduce your risk of heart attack and stroke associated with PAD. PLAVIX helps keep blood platelets from sticking together and forming dangerous clots, the cause of most heart attacks and strokes. Ask your doctor about PLAVIX.

This chain of argumentation is fairly complex, and there could be many ways to diagram it, but one simple way that captures the practical reasoning structure takes the following list of statements as representing the key explicit premises.

I want to avoid the double risk of heart attack or stroke [goal].

If you have poor blood circulation in your legs, you may also have it in your heart and brain.

I have poor blood circulation in my legs.

I may have poor blood circulation in my heart and brain.

PLAVIX is proven to help reduce the risk of heart attack and stroke associated with poor blood circulation in the heart and brain.

I should ask my doctor about PLAVIX.

By adding some implicit premises to the above list of explicit premises, an argument diagram can be produced, shown in figure 4. The three statements in the darkened boxes with the dashed lines around them are implicit premises that have been inserted. In one instance, an implicit premise also plays the role of an implicit conclusion by forming a chain of reasoning. A few words need to be added about the schemes.

Another type of argument widely used in the ads is the variant of practical reasoning called value-based practical reasoning (Bench-Capon, 2003). The version of this scheme below is from Walton, Reed and Macagno, 2008, 324.

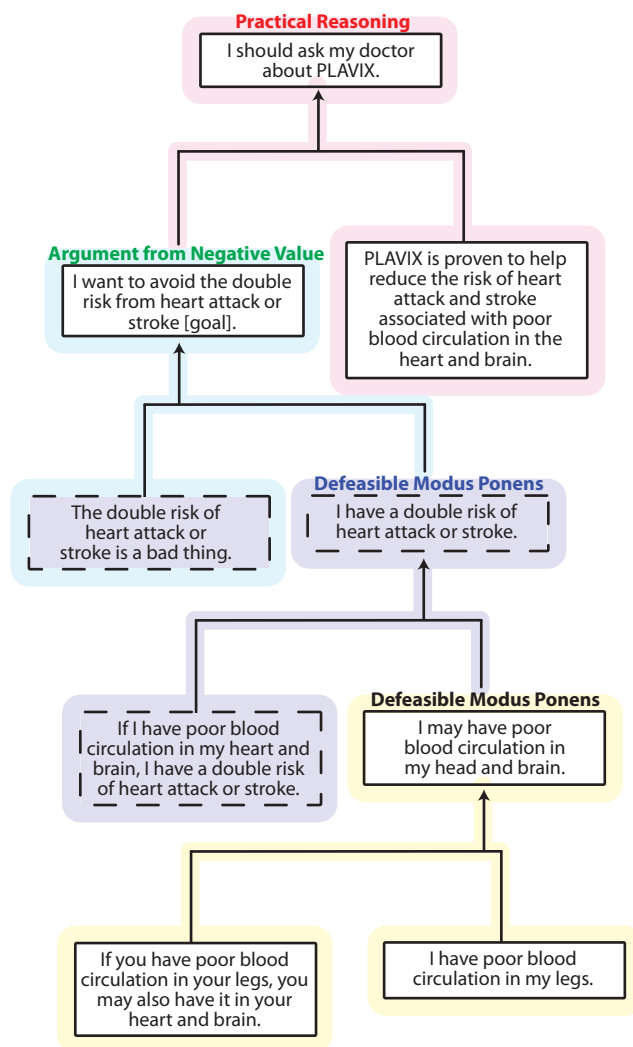


Figure 4: Argument Diagram of the PLAVIX Example

PREMISE 1: I have a goal G .
PREMISE 2: G is supported by my set of values, V .
PREMISE 3: Bringing about A is necessary (or sufficient) for me to bring about G .
CONCLUSION: Therefore, I should (practically ought to) bring about A .

This form of argument is illustrated by the goal premise in the practical inference at the top of figure 2 being supported by an argument from values just below it. The scheme for argument from negative value is from (Walton, Reed and Macagno, 2008, 321).

PREMISE 1: Value V is negative as judged by agent A (judgement value)
PREMISE 2: The fact that value V is negative affects the interpretation and therefore the evaluation of goal G of agent A (If value V is bad, it goes against commitment to goal G).
CONCLUSION: V is a reason for retracting commitment to goal G

Note that value-based practical reasoning can be classified as a hybrid scheme that combines argument from values with practical reasoning.

4 The Dannon Yogurt Example

The advertising campaign called “In Soviet Georgia”, designed by the Burson ad agency, was run in various media. From 1975 through to 1978, these commercials were broadcast on American television, and print ads were run in magazines like *Time* and *Newsweek*. The commercial, called Son of Russia, written by Steve Kasloff, won the Clio award in 1978. The commercials presented shots of elderly Georgian farmers and the announcer said, “In Soviet Georgia, where they eat a lot of yogurt, a lot of people live past 100”. *Advertising Age* ranked In Soviet Georgia as number 89 on its list of the best of 100 greatest advertising campaigns.

Let’s take as the text of the example to be analyzed the statement “In Soviet Georgia, where they eat a lot of yogurt, a lot of people live past 100”. It would appear that two premises are expressed.

Premise: In Soviet Georgia, they eat a lot of yogurt.
 Premise: In Soviet Georgia, a lot of people live past 100.

Similarly to the previous example, it would seem that in this case the conclusion is a prudential statement, ‘You should eat yogurt’. However, the chain of reasoning in this case is a little more complex. We can analyze it by inserting some other implicit premises, and a secondary conclusion that links these premises to the ultimate conclusion.

Implicit premise: The eating of the yogurt is causing the people in Soviet Georgia to live past 100.
 Implicit conclusion: If you want to live longer, you should eat yogurt.
 Implicit premise: You want to live longer.
 Implicit Conclusion: You should eat yogurt.

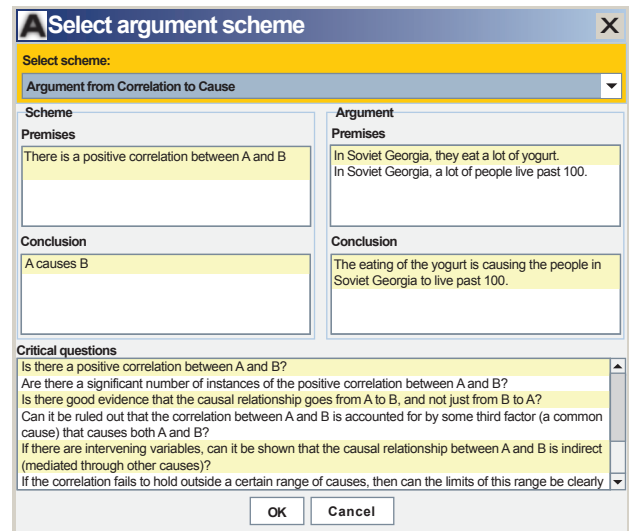


Figure 5: Screenshot of the Argument Scheme Selection Menu of Araucaria

We can put all these elements together into an analysis by applying the argumentation scheme for argument from correlation to cause (Walton, Reed and Macagno, 2008, 328).

PREMISE: There is a positive correlation between A and B .
CONCLUSION: Therefore A causes B .

The following are the three critical questions for argument from correlation to cause.

CQ_1 : Is there really a correlation between A and B ?
 CQ_2 : Is there any reason to think that the correlation is any more than a coincidence?
 CQ_3 : Could there be some third factor C , that is causing both A and B ?

This scheme is shown in the screen shot of the argument scheme selection menu of Araucaria in figure 5. How the scheme fits the example is shown on the right of the menu. At the bottom of the screenshot of the menu in figure 5 some of the critical questions matching the scheme for argument from correlation to cause are shown.

Now we can see how to analyze the argumentation in this case. The two explicit premises ‘In Soviet Georgia they eat a lot of yogurt.’ and ‘In Soviet Georgia a lot of people live past 100.’ go together to support the implicit conclusion that the eating of the yogurt is causing the people in Soviet Georgia to live past 100. The argumentation scheme that binds these two premises together in support of the conclusion is argument from correlation to cause. But we can analyze the argument still further by showing how this argument leads to the conclusion that if you want to live longer you should eat yogurt. This conclusion, in turn, taken together with the implicit premise that you want to live longer, which can be seen as a goal premise, leads to the ultimate conclusion that

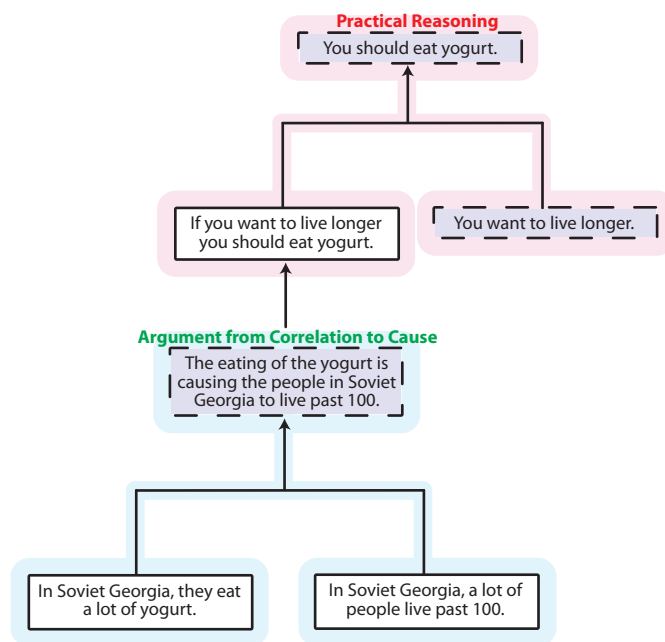


Figure 6: Araucaria Visualization of the Argument in the Dannon Yogurt Example

you should eat yogurt. These two premises work together, based on the argumentation scheme for practical reasoning, to support the ultimate conclusion. The structure of the argumentation as a whole is displayed in figure 6. The analysis of this case is interesting because it shows not only an ad with an implicit conclusion, but one with an implicit sub conclusion used to link one part of the argument with another. Also, two argumentation schemes can be applied to the structure of the chain of argumentation. We essentially have to chain two arguments connected to each other because an implicit conclusion of the one argument functions as a premise supporting the one premise in the other argument.

An interesting discussion point in the analysis of this particular example is whether the argument commits the *post hoc* fallacy, the error of leaping from a correlation to a premature causal conclusion? It would not be hard to argue that the argumentation in this case does commit the *post hoc* fallacy. The analysis of it shown in the diagram in figure 6, along with the argumentation scheme and list of critical questions given in figure 5, provide the right kind of evidence needed to support such a criticism. So here we have a widely successful ad that, arguably, is an instance of the *post hoc* fallacy.

5 Conclusions

The examples studied show how argumentation schemes and enthymemes are combined in interesting ways. The examples show how schemes can help reveal implicit premises and conclusions in the arguments. The yogurt example, in particular, shows how an analysis can help to uncover a suspect structure of reasoning that is open to critical questioning. The fourth critical question, which asks if the connection could

be accounted for by some other factor than the one cited as cause, is especially important in this case. It seems reasonable to conclude that jumping to the conclusion that the eating of the yogurt is the cause of the longevity is questionable, given that many other factors, like environment and life style, need to be taken into account.

Sixty-three sample arguments were analyzed in a manner showing how a particular scheme fits the argument identified in the text of discourse. The examples analyzed strongly suggest that the scheme for practical reasoning represents the fundamental form of argument used in the ads. Certainly it is the dominant argumentation scheme used in the ads, and by far the most common scheme that was identified. The examples studied also show how the scheme for practical reasoning is used in these health ads in interesting ways by combining it with other schemes and with the use of enthymemes. The examples show how schemes can help reveal implicit premises and conclusions in the arguments. The yogurt example, in particular, shows how an analysis can help to uncover a structure of reasoning that is open to critical questioning. The fourth critical question, which asks if the connection could be accounted for by some other factor than the one cited as cause, is especially important in this case. It seems reasonable that to jump to the conclusion that the eating of the yogurt is the cause of the longevity is questionable, given that many other factors, like environment and life style, need to be taken into account.

The use of practical reasoning is highly visible in some of the examples, while in others, it is much more implicit, and can only be revealed by deeper analysis that brings out more enthymemes and implicit inferences. In general, such examples can always be analyzed in a more coarse-grained way that only brings out the main premises and conclusions around which the central argument is built, or in a more fine-grained way that results in a larger and more complex argument diagram with many enthymemes. These findings suggest that it may not always be that easy to apply automated text mining tools to scan over the text of an ad and try to identify instances of a particular type of argument that is found. However, indicator words associated with a scheme like practical reasoning could be studied as an aid to computational linguistics techniques using argumentation schemes for text mining (Moens et al., 2007).

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