THINKING LOG

TWO Examples of the final product of the evaluation of a specific argument

THINKING LOG: The syllabus will specify (a) the number of thinking logs you must submit, and (b) when you must submit them.

(1) You will select an argument or causal explanation from any source EXCEPT from any teaching material on argumentation, logic, critical thinking, Reading for Logical Analysis, and 10 Dumbest Mistakes.

Please select something that interests you.
I strongly encourage you to select examples from your other courses (e.g. textbooks).

(2) Clearly identify in full the source.
(3) Evaluate the reasoning using all the skills that you know or have learned up to that point in the course.
(4) As the course progresses you will revise and improve your past evaluations.
(5) You will write the DATE each time that you revise your evaluation.
(6) By the end of the course I expect your evaluations to be of high quality, and to use all and only the relevant stages of CRISITCOOO.
(7) If the syllabus requires you to submit your thinking logs at the end of the course, then on the first page of your thinking log you will (a) identify your best evaluation, and (b) justify in a paragraph your belief that it is the best one.
(8) You will always have a few examples of arguments or explanation you have evaluated – and not yet submitted – with you in class, for I want to use student examples in class. This will help you to improve the quality of your project.
(9) If the syllabus requires you to submit your thinking logs at the end of the course, you MUST ALSO hand in an electronic copy (MS Word, or rich text format) either as an email attachment, on diskette or CD.
(10) Arrange to give one another feedback prior to and after class.
(11) You may consult me any time for comments on your project, though I would prefer that you bring your questions and examples to class so that everyone (which includes me) would learn with you.

In the following lengthy example, my comments between the square brackets “[“ and “]” are addressed to you, and are not part of the evaluation. Answers to the evaluative questions (based on CRISITCOOO) will vary according to the argument or explanation evaluated, so do not simply parrot my answers, but use them to guide your own evaluation. Bear in mind that this example illustrates a final evaluation that would have gone through various revisions, and that would be submitted at the end of the course. So, early in the course there will very likely be material in this evaluation that you do not understand. You will acquire it as the course progresses, and your ongoing revisions will help you to apply it, and eventually to master it. I have also written this evaluation in a way that will be instructive to you, which partly explains why it is much longer than what I expect from you. Hence, most of your evaluations will not need to be this lengthy.

EXAMPLE 1, LONGER INSTRUCTIVE EXAMPLE

ARGUMENT: (1) The value of stocks has skyrocketed lately. Since (2) the values of stocks are cyclical, (3) stock prices will soon fall.
GOAL evaluate the argument in order to determine the likelihood of the conclusion. I will use CRISITCO.
1. C: Conclusion? (3) Stock prices will soon fall.
2. R: Reasons? (1) The value of stocks has skyrocketed lately. (2) The values of stocks are cyclical.
3. I: How do the premises and conclusion interconnect? \( (1\&2) \rightarrow 3 \), or more accurately \( (1) \& (2) \)

4. S: What is the strength of support that \((1\&2)\) bring to \((3)\)?

(a) Can I construct/invent counterexamples? (b) How likely are my counterexamples?

Despite the vagueness of “soon”, “fall”, and “skyrocket”, I can still invent two simple counterexamples:

**CE1** It is possible that:

(1) and (2).

The stocks stay at the same level for a time that extends beyond what “soon” means in this context (e.g. when there is an extremely stable economy).

It is false that stock prices will soon fall.

1. [[STUDENTS: All the premises must be assumed to be true in a counterexample.]]
2. [[STUDENTS: This is the what-if statement in a counterexample. Use as many as are required to make yourself and your audience (a) understand how it is possible for all the premises to be true and the conclusion false. (b) They must all be consistent among themselves with the assumed truth of the premises and the assumed falsity of the conclusion:]]
3. [[STUDENTS: The conclusion must be assumed to be false in a counterexample: it is negated.]]

**CE2** It is possible that:

(1) and (2).

The stocks continue to increase, at any varying rate between and including skyrocketing and leveling off (flat) values, for a time that extends beyond what “soon” means in this context (e.g., when the economy is steadily growing).

It is false that stock prices will soon fall.

Either counterexample proves that \((1\&2)\) are NOT SUFFICIENT for the TRUTH of \((3)\): either counterexample proves that the argument is NOT VALID.

Even though the support of the premises is not conclusive, the premises do bring some degree of support. In order to estimate that support, I must attempt to invent as many realistic counterexamples as possible, and estimate their combined probability. I cannot think of additional realistic counterexamples, so I’m limited to the two that I have imagined. In fact, only CE2 is realistic, for the sock market changes from day to day on regular workdays. I cannot estimate their combined probability without first clarifying a few words.

[[STUDENTS: We should clarify only the words that affect either the truth or support of the reasons, or the truth of the conclusion; if vague or ambiguous words do not affect any of these, we should leave them alone. NOTE: we discover what needs to be clarified after at least minimally evaluating either the truth or support of reasons, or after at least minimally assessing the truth of a conclusion independently of the given premises.]]

5. C: Are there any key words whose interpretation affects either the truth or support of the premises, or the truth of the conclusion?
“stock”: The author is using “stocks” to refer to what precisely? To all, or most, or some stocks? Since there is no context, but the author appears to be using “stocks” in a general way, I will assume that s/he is referring to such figures as the Dow Jones. [[STUDENTS, your examples of arguments and explanations will be coming from specific contexts. Use those contexts to guide your interpretation of key words whose vagueness or ambiguity affects either the truth or support of the reasons.]]

“fall”: The stocks must decrease by how much in order to be able to infer that they “fall”? The most charitable interpretation is that any decrease constitutes a fall. [[STUDENTS: When evaluating arguments or explanation there are two interpretive principles to consider: The principle of charity/generosity: choose the interpretation that results in the strongest support and most likely reasons. The principle of fidelity/loyalty: choose the interpretation that corresponds most closely to the author’s intended meaning, given the context, his/her use of similar expressions, and goals.]]

“soon”: How soon? In a few hours, days, or weeks? Since “soon” is used in the context of the stock market, which can be volatile, it very likely means “within a month from the time the stocks skyrocketed”. This sets an upper limit of “soon”. If I interpret “soon” to mean “within a day”, the counterexamples together become extremely probable, and so, the support of (1&2) for (3) becomes extremely weak. If I interpret “soon” to mean “within four days”, the counterexamples together become less probable, and the support of (1&2) for (3) increases. So, as I increase the number of days within which the stocks are predicted to fall, the support increases. However, as I increase that span of time, it becomes increasingly less reasonable to describe the fall as occurring “soon”. I will tentatively interpret “soon” to mean in this context that the stocks will decrease by any amount within a week or two.

“skyrocketed”: I will assume that the increase or decrease in the value of stocks is determined by comparing the final values at the end of the day when the stock market closes. (A) There are three instances in the history of stocks in the 20th and 21st centuries that could be accurately described as having “skyrocketed”. But (B) there are many instances when the stocks had a sudden and unusually high increase in value. Since I do not know the author’s intended meaning of “skyrocketed”, AND the interpretation of this word affects my evaluation of the degree of support of the premises, I will have to evaluate the argument relative to both interpretations (A) and (B).

6. Support: what is the degree of support that (1&2) bring to (3) relative to interpretation (A)?
Here is the kind of general question that guides (but does not completely determine) my estimation:
(i) Relative to the number of times that stocks have skyrocketed, how often have they stayed the same or increased for about two weeks after that “skyrocketing” increase in values? Here is a break down of the same
question into more precise questions: (ii) How often have the stocks stayed the same (i.e., CE1) or increased (i.e., CE2) for about two weeks after a “skyrocketing” rise? Let the answer be represented by \( a \). How often have the stocks decreased within two weeks after “skyrocketing”? Let the answer be \( b \). My estimation of the \( \Pr(CE1 \text{ or } CE2) \) is based on my rough estimation of the ratio, \( a/(a+b) \). [[STUDENTS: You can see how these questions would facilitate my search for information. This kind of questioning is very important for the estimation of the probability of most counterexamples, and it varies according to the content of each argument or explanation. You will develop this questioning ability as you evaluate a great variety of examples, and bring them to class for discussion.]]

Due to my extremely limited knowledge of the history of the stock market I consulted one of my colleagues who is an economist. For the three cases in which the stock market skyrocketed, the stocks decreased within a few days. So, the ration is 0/3, which means that the counterexamples, though logically possible, have a combined probability of 0: they are in fact false!

How reliable is this ratio? Such ratios merely represent the frequency at which events have occurred or not occurred, and do not indicate the underlying causes. They are not reliable when only a few cases are given because they do not occur in a wide variety of economic, social, and political contexts that would take into consideration the many factors that influence the stock values. For example, if there had been 100 instances of skyrocketing stocks at different times during the 20th and 21st centuries, then those instances would very likely have occurred in different economic, social, and political contexts, thereby indicating that all those economic, social, and political differences have no effect on the very early decline of stocks after having skyrocketed. So, if stocks were to skyrocket again, very likely in a different economic, social, and political situation, then either the absence of counterexamples or the few occurrences of counterexamples (where there are skyrocketing values but no decline within two or more weeks) would definitely indicate that it is very likely that this 101st skyrocketing example would also decline within a few days. Therefore, this ratio of 0/3, indicating a probability of 0/3 of the counterexamples against the support of the premises, which suggests that the support of the premises is extremely strong, is not reliable.

Is this the only information I have to assess the argument relative to interpretation (A)? If I had the time I could explore similar market situations that would give me a higher ratio of \( a/(a+b) \), thereby increasing the likelihood of the counterexamples. Unfortunately, it would be difficult to ensure that these similar market behaviors are similar in the relevant respects. [[STUDENTS: I could be using a questionable argument from analogy.]] It therefore appears that I am left with the ration 0/3. However, given the unreliability of this ratio expressing the likelihood of the counterexamples, and the high likelihood that the skyrocketing stock values referred to in the argument occur in an economic, social, and political context different from the contexts
where the three skyrocketing instances have occurred, it seems that the combined probability of (CE1 or CE2) is moderately probable.

[[STUDNENTS: In order facilitate our overall evaluation of the probability or likelihood of the conclusion (Remember, that is our ultimate GOAL), we must express the strength of support of reasons in terms of probability. To do this we must express inferences as conditional statements. Any inference can be expressed as a conditional statement. For example, given the argument structure (1&2) SO (3), it can be expressed as IF (1&2), THEN (3). So, the likelihood of the conditionalized inference (i.e., the inference expressed in its conditional form), can be represented by Pr{If (1&2), then (3)}, or Pr{(1&2) → 3}.]]

The following is a visual way of estimating the probability of the conditionalized inference from the estimated combined probability of the counterexamples:

The estimated likelihood of the CE’s against the support of (1&2) for (3):

Pr{1 & 2 & not-3)}is moderate.

The estimated strength of the support:

Pr{(1&2) → 3} is moderate.

[[STUDENTS]] Note that (1&2& not-3) is simply the counterexample against (1&2) → 3. The sea-saw or teeter totter is a visual way of representing the inverse relation between the combined likelihood of the CE’s and the strength of the support, Inverse relation: The greater the combined likelihood of the CE’s, the smaller the likelihood of the conditionalized inference, i.e., the weaker the support. The smaller the combined likelihood of the CE’s, the greater the likelihood of the conditionalized inference, i.e., the stronger the support. Always keep in mind that one’s estimation of the probability of CE’s is always relative to one’s current knowledge and imagination. Remember that when we estimate the support to be strong, it could be cause we have overlooked some probable counterexamples that would have proven the support to be much weaker.]]

7. Support: what is the degree of support that (1&2) bring to (3) relative to interpretation (B)?

[[STUDENTS: When key words that affect the support or truth of an argument have more than one interpretation, and neither interpretive principles can make use choose one interpretation over the other, we must evaluate the argument according to each interpretation.]] According to interpretation (B), “skyrocketed” refers to many instances when the stocks had a sudden and unusually high increase in value. There are many such cases, so the probability of the counterexamples that I will estimate will be more reliable than the probability of 0/3 discussed in interpretation (A). In the great majority of these many cases the stocks did
continue to rise for more than two weeks. Hence, the \( \text{Pr}(\text{CE1 or CE2}) \) is estimated to be high. We can visually represent the strength of support that premises (1&2) bring to conclusion (3) as follows:

The estimated likelihood of the CE’s against the support of (1&2) for (3): \( \text{Pr}\{1 \& 2 \& \text{not-3}\} \) is **high**.

The estimated strength of the support: \( \text{Pr}\{(1\&2)\Rightarrow 3\} \) is **low**.

8. **Are the given premises acceptable?** No context is given, and insufficient information is provided to verify the two premises. So, I must suspend judgment regarding their truth or acceptability. [[STUDENTS: Your examples will be taken from specific contexts that should help you to assess the truth of the reasons in your arguments and explanations. However, sometimes, the reasonable thing to do is to suspend/withhold one’s judgment about the truth of claims, especially when we lack the relevant knowledge.]]

[[The following steps 9 and 10 are not necessary for **this specific** argument. You will understand why as you read on. I am including them here for you because they are sometimes necessary, and they can sometimes be *alternatives* ways of evaluating arguments or explanations.]]

9. **Are there any implicit (unstated, hidden, missing, tacit, suppressed) premises that make the logical connection between the given reasons and the conclusion?** Here is a reconstruction of the argument with such a tacit premise:

(1) The value of stocks has skyrocketed lately.
(2) The values of stocks are cyclical.

[4] [Whenever stocks skyrocket and values of stocks are cyclical, their prices fall soon afterwards.]

So, (3) stock prices will soon fall.

The addition of this tacit premise would make the argument valid. So, the evaluation of this argument would next shift to the evaluation of the truth or acceptability of its premises.

10. **Is the tacit premise true/acceptable?** Because of the two reasonable interpretations of “skyrocketed”, this tacit premise must be evaluated according to both interpretations. Since this tacit premise is just the conditionalized inference that I have already evaluated, it is vulnerable to the very same sets of counterexamples advanced against the joint sufficiency of premises (1&2) for the truth of (3). So, if we interpret “skyrocketed” according to interpretation (A), the counterexamples show that the tacit premise is only moderately probable, just as they show that the conditionalized inference is only moderately probable;
and if we interpret it according to interpretation (B), the counterexamples show that the tacit premise has low probability, just as they show that the conditionalized inference has low probability. Hence, an evaluation of this argument by means of this tacit premise does not add anything significantly new to the evaluation of the argument. In fact, it complicates the *overall evaluation* to determine the likelihood of the conclusion (3):

<table>
<thead>
<tr>
<th>Interpretation (A)</th>
<th>Prob. of the conditionalized inference</th>
<th>Prob. of premise (1)</th>
<th>Prob. of Premise (2)</th>
<th>Prob. of tacit premise (4)</th>
<th>Prob. of conclusion (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pr{ (1&amp;2&amp;4) → 3 }</td>
<td>x Pr(1) x Pr(2) x Pr(4) = Pr(3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Values:</td>
<td>1 x ? x moderate x =</td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Interpretation (B)</th>
<th>Prob. of the conditionalized inference</th>
<th>Prob. of premise (1)</th>
<th>Prob. of Premise (2)</th>
<th>Prob. of tacit premise (4)</th>
<th>Prob. of conclusion (3)</th>
</tr>
</thead>
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<tr>
<td>Pr{ (1&amp;2&amp;4) → 3 }</td>
<td>x Pr(1) x Pr(2) x Pr(4) = Pr(3)</td>
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<td></td>
</tr>
<tr>
<td>Values:</td>
<td>1 x ? x low x =</td>
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</tbody>
</table>

Here is the overall evaluation of the likelihood of conclusion (3) *without* considering the kind of tacit premise that makes the argument valid is simply:

<table>
<thead>
<tr>
<th>Interpretation (A)</th>
<th>Pr{ (1&amp;2) → 3 }</th>
<th>x Pr(1) x Pr(2) = Pr(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values:</td>
<td>moderate x ? x =</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interpretation (B)</th>
<th>Pr{ (1&amp;2) → 3 }</th>
<th>x Pr(1) x Pr(2) = Pr(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values:</td>
<td>low x ? x =</td>
<td></td>
</tr>
</tbody>
</table>

Interpretation (A) with the tacit premise, and interpretation (A) *without* the tacit premise both generate the same estimated probability of conclusion (3), for the probability of *any* conditionalized *valid* inference is simply 1 [[just as the probability of any true statement is 1]], and all the other values that are multiplied are *respectively* the same in both interpretations (A). The same applies to the two versions of interpretation (B). [[STUDENTS: Now you should understand why steps 9 and 10 for *this specific* argument do not help us in the overall evaluation of the argument, and only complicate the evaluation.]]

Even if I were to qualify/hedge premise [4] as follows:

[4’] *Usually*, whenever stocks skyrocket and values of stocks are cyclical, their prices fall soon afterwards,
I would still have to use the same counterexamples to estimate the likelihood of \([4^*]\), and would arrive at the same estimation for \(\text{Pr}[4]\), and ultimately at the same estimation regarding \(\text{Pr}(3)\). [[STUDNETS: Expressions such as “usually” are used to qualify a statement in order to signal that one does not take the statement to be true universally.]]

[[STUDENTS: The following step 11 is not necessary for this specific argument. I am including them here for you because they are sometimes necessary, and it can sometimes be alternatives way of evaluating arguments or explanations.]]

11. **Are there any tacit assumptions that do not make any logical connection between the given premises and the intended conclusion?** [[STUDENTS: These tacit assumptions are discovered by means of successful counterexamples against inferences. They are the negation of the what-if statements used in successful counterexamples.]

What-if statement: the statement that is consistent with the assumed reasons and negated conclusion, and that helps us to understand how it is possible for all the reasons to be true and the conclusion false.]] The what-if statement in CE1 is: the stocks stay at the same level for a time that extends beyond what “soon” means in this context. The what-if statement in CE2 is: the stocks continue to increase, at any varying rate between skyrocketing and leveling off (flat) values, for a time that extends beyond what “soon” means in this context. The negation of these two claims must be implicitly assumed in order to block both counterexamples, the author is logically committed to them (even if s/he is not aware of them) in order to block the counterexamples:

(1) The value of stocks has skyrocketed lately.
(2) The values of stocks are cyclical.
(4) The stocks will not stay at the same level for a time that extends beyond what “soon” means in this context.
(5) The stocks will not continue to increase, at any varying rate between skyrocketing and leveling off (flat) values, for a time that extends beyond what “soon” means in this context.

So, (3) stock prices will soon fall.

The insertion of these two assumptions does NOT make the argument valid, but they do block the two counterexamples, and thus increase the support for the conclusion. Sometimes it is valuable to identify these assumptions especially when they are either false or unlikely. But in this specific case this approach unnecessarily complicates matters for the estimation of the likelihood of conclusion (3):

**Interpretation (A)**

\[
\text{Pr}\{(1 \& 2 \& 4 \& 5) \Rightarrow 3\} \quad \times \quad \text{Pr}(1) \quad \times \quad \text{Pr}(2) \quad \times \quad \text{Pr}(4 \quad \& \quad 5) = \quad \text{moderate} \quad \text{Pr}(3)
\]
Interpretation (B)

\[
\text{Pr}\{(1\&2\&4\&5) \rightarrow 3\} \quad \times \quad \text{Pr}(1) \quad \times \quad \text{Pr}(2) \quad \times \quad \text{Pr}(4 \& 5) \quad = \quad \text{Pr}(3)
\]

So, to keep matters simple for you, though there is an increase in the support, that increase is neutralized by the additional multiplication of the estimated probability of Pr(4&5). [[STUDENTS: It gets a bit more complicated to show that this approach is not going to be helpful for this specific example, so I will stop here. But whenever we do adopt this approach, there is the next step to complete:]]

12. Are these tacit assumptions true/acceptable? [[STUDENTS: The probability of these tacit assumptions is just the inverse probability of the what-if statements because they are just the negation of the what-if statements. For instance, if the estimated probability of a what-if statement were high, the probability of the negation of that statement would be low. If we were to assign numbers to our estimations, for instance, 0.9 to the former, then the probability of its negation would be 0.1.]]

13. What is/are the best opposing views to my evaluation of this argument? How might the author, or an intelligent proponent of the author’s argument, respond to my criticism? In earlier drafts of this evaluation, this question helped me to realize that I had exaggerated the combined probability of my counterexamples. This question also incited me to get some economic information that allowed to have a more precise sense of the likelihood of the counterexamples under interpretations (A) and (B), and to become more aware of the unreliability of the probability of the counterexamples under interpretation (A). (Here is a slightly different way of expressing the same idea. Since the stock market has not skyrocketed many times in its history, the estimated ratio with which I estimated the probability of the counterexamples would be based on a very small sample. For example, if there have been 5 instances of skyrocketing stocks, and in 4 of those cases the stocks either stayed at the same level (CE1) or continued to increase (CE2) for a time that extends beyond what “soon” means in this context, I would have weak evidence to say that the Pr\{(1\&2\&) \rightarrow 3\} is only 1/5. However, if there had been 5000 cases of skyrocketing stocks, and 4000 of those stayed at the same level or continued to increase, then I would have very strong evidence to support my overall evaluation.) I have also attempted to avoid misrepresenting the author’s argument by evaluating the argument twice, each according to the most charitable interpretations of “skyrocketed”.

14. Are there any other perspectives that I can use to evaluate the argument? If I knew precisely the context in which this argument is presented, and the time period to which it was intended to apply, I could consider various national and international political issues that would affect our economy; the financial health of major
industries that would affect our economy; and some scientific discoveries that would affect investments. These other perspectives would all be relevant because they would affect my evaluation.

**15. Overall Evaluation:** Given my evaluation of the support and truth of the premises, what is the likelihood of the conclusion?

**Interpretation (A)**
\[
\Pr\{(1\&2\&)\Rightarrow 3\} \times \Pr(1) \times \Pr(2) = \Pr(3)
\]
Values: **moderate** \(x\) \(?\) \(x\) \(?\) = \(?\)

**Interpretation (B)**
\[
\Pr\{(1\&2\&)\Rightarrow 3\} \times \Pr(1) \times \Pr(2) = \Pr(3)
\]
Values: **low** \(x\) \(?\) \(x\) \(?\) = \(?\)

Since the likelihood of the premises cannot be determined, I must withhold judgment regarding their truth, and consequently, I must suspend judgment about the probability of the conclusion. However, if both premises were true, the overall estimation of the probability of the conclusion would be:

**Interpretation (A)**
\[
\Pr\{(1\&2\&)\Rightarrow 3\} \times \Pr(1) \times \Pr(2) = \Pr(3)
\]
Values: **moderate** \(x\) \(1\) \(x\) \(1\) = **moderate**

**Interpretation (B)**
\[
\Pr\{(1\&2\&)\Rightarrow 3\} \times \Pr(1) \times \Pr(2) = \Pr(3)
\]
Values: **low** \(x\) \(1\) \(x\) \(1\) = **low**

Therefore, though I cannot estimate the actual probability of the conclusion, I can conclude, that conclusion (3) has at most either moderate or low probability. Since I do not have the context of this argument, and thus cannot explore relevant perspectives, and since I am not in a position to invite the author of this argument to respond to my evaluation, my overall evaluation can only be tentative.
EXAMPLE 2, SHORTER EXAMPLE

The Case for College

Entries: 8/30, 9/10, 9/25, 9/26, 10/15, 10/28, 11/4, 11/15, 12/8

Argument: (1)<You should go to college>. (2)<Graduates earn over 50% more than non-graduates> and (3)<have more job opportunities available to them>. (4)<You will learn interesting things you can take with you your entire life>. Also, The Public Health Service has concluded that because (5)<graduates live longer> and (6)<exercise more>, (7)<going to college will give you a better quality of life>.

The College Board, www.collegeboard.com

I: Interconnect

There are two arguments in the passage. I will begin with the reasoning from premises (5&6) to conclusion 7. What is the strength of the support that (5 & 6) bring to 7? Is it possible for (5&6) to be true and 7 false? In order to answer this I must first clarify “quality of life” in conclusion 7. The quality of one’s life is determined by one’s physical, psychological, and spiritual (moral) well-being. Hence, it is claimed in conclusion 7 that one’s physical, psychological, and spiritual (moral) well-being will be better than that of those who do not go to college. With this clarification, I can now construct some counterexamples, which, for the sake of brevity, I have all combined in the extended what-if statement: each disjunct represents a distinct counterexample.

It is possible that:

(5&6) AND I have a very boring job, OR I have a terrible marriage, OR I have no sense of purpose, OR I’m in jail for a white collar crime, OR, I have no friends, OR etc.). AND

It is false that having gone to college has given me a better quality of life.

There are many counterexamples because there are many factors that affect one’s quality of life. These counterexamples prove that (5 & 6) are not sufficient for the truth of 7: the inference is not valid. Despite the invalidity of this argument, how much support do (5 & 6) bring to 7? Since going to college typically does not address all these other non-career related factors, but does sometimes give some opportunities to reflect on those factors (either through a few non-career related courses (e.g., philosophy, literature, history, psychology, sociology) or by mingling with a slightly more reflective crowd) the combination of these counterexamples
seems slightly improbable. So, though the argument is not valid, the conditionalized inference IF (5&6)THEN 7 is slightly probable: the support is slightly strong. 

What about the truth of premises (5&6)? Since they come from a reputable source, the Public Health Service, I accept them as true, so they have a probability of 1.0: Pr(5&6) = 1.0.

My overall evaluation of this subargument: 

\[ Pr(7) = Pr((5&6) \rightarrow 7) \times Pr(5&6) = \text{slightly probable} \times 1.0 \text{ probable} = \text{slightly probable}. \]

In other words, conclusion 7 is slightly probable.

Now I will examine the second argument consisting or premises (2&3&4&7) supporting conclusion 1.

If all the premises were true, could the conclusion still be false? First,

CE1 It’s possible that
2&3&4&7. AND
One does not want any of the things mentioned in the premises. AND
You should NOT go to college.

CE2 It’s possible that
2&3&4&7. AND
One does not care about greater earnings and more job opportunities, and can learn more interesting things by oneself outside of college. AND
You should NOT go to college.

I cannot think of any other realistic counterexamples. Though each counterexample proves that premises (2&3&4&7) are not sufficient for the conclusion, their combined probability, Pr(CE1 or CE2), is extremely low. Hence, relative to those counterexamples, Pr(2&3&4&7 \rightarrow 1) is extremely high: the probability of the conditionalized inference is extremely high.

Are premises (2&3&4) true (I have already discussed the truth of 7)? The author has not provided any sources to back up his/her claims. I will research accredited government reports on this matter to judge the truth and probability of these claims. In the fall of 1997, the National Commission on the Cost of Higher Education found substantial increases in lifetime earnings when comparing those with a bachelor’s degree to those without one. Furthermore, The Ford Foundation as well as the Institute for Higher Education Policy both collaborated on a 1998 study examining the numerous benefits of college. While they did not provide many specific statistics, they were able to conclusively find that those who attended college received significantly more opportunities financially as well as socially that were not available to those who did not attend college. Other institutions also referenced in this study offered further credence to these claims. While it was important to use these relevant sources to verify the soundness of the statistics, it must be said that some of these were educational institutions in favor of going to college, and therefore it is possible that there is a conflict of interest here: for these institutions will benefit if more students attend them. So, there is a
possibility of bias here. However, due to the credibility of these institutions, the transparency of their study, and the fact that non-educational institutions arrived at similar conclusions, it is reasonable to accept these premises as true.

My **overall evaluation** of the argument: \[ \Pr(1) = \Pr(2\&3\&4\&7 \implies 1) \times \Pr(2\&3\&4) \times \Pr(7) \]

= extremely probable x 1.0 probable x slightly probable = slightly probable (in fact lower than the probability of 7). In order to understand better this evaluation, we simply need to replace the verbal descriptions by approximate numbers: let 0.95 stand for “extremely probable”, and 0.55 for “slightly probable”. Then \( \Pr(7) = 0.95 \times 1.0 \times 0.55 = 0.52!! \) This final estimate seems rather low because we typically do not pay careful attention to arguments, misapply basic tools of evaluation, or fail to understand how probabilities work. So, despite appearances, the College Board has presented a very weak argument. Perhaps its members did not take the right college courses…