

Chapter Four

ARGUMENTS

People sometimes say that you must believe in feelings deep inside, otherwise you'd never be confident of things like 'My wife loves me'. But this is a bad argument. There can be plenty of evidence that somebody loves you. All through the day when you are with somebody who loves you, you see and hear lots of little tidbits of evidence, and they all add up. It isn't purely inside feeling, like the feeling that priests call revelation. There are outside things to back up the inside feeling: looks in the eye, tender notes in the voice, little favors and kindnesses; this is all real evidence.

Richard Dawkins

THE IMPORTANCE OF ARGUMENTS

I am in an unusual career where arguments dominate my professional life. I am paid to teach my students what philosophers have had to say on a great array of topics. Almost always these philosophers, whether they are the historical "biggies," or contemporary thinkers, support their theories with arguments. Obviously, if I am going to do my job, I need to help my students sort out the good arguments from the bad. As a professor, I also participate in what is called "shared governance," and as a consequence I am required to vote and help decide policies, curricula, and other matters of university importance. Administrators and my colleagues consistently defend positions of great significance to the institution with impassioned arguments. Since I take this part of my profession very seriously, I find it essential to decide which of these arguments I find most persuasive.

Most of us are not simply consumers of arguments, we are producers as well. In my own professional work I present and defend theories about privacy, the Constitution, the death penalty, the existence of God, and a number of other philosophically, politically, and legally controversial topics. As an active participant in shared governance, I take sides, advocate positions, and occasionally lead the charge for particular causes. All of this demands that I defend my views. In these cases it is my name on the argument, and there is a heightened sense, not just of ownership, but of personal and professional responsibility. I need my arguments to be as strong as they can be – not just convincing, but plausible, and hopefully pointing in the right direction.

Your life may not be as argument-intensive as mine, but if you stop to reflect a bit, I think you'll find arguments all around you. Advertisers make arguments for why you should buy their products, and politicians for why they deserve your vote. You may need the advice from accountants and economists, hopefully backed up with arguments, to plan for a major business investment, or your retirement. And you are a producer of arguments, as well. That memo you wrote to your boss for a change in the way things are done, or the case you just made to your partner about the need to buy a new car.

This book is about arguments and a suggested technique for distinguishing good arguments from bad ones. These general hints are intended to be of use both when you find yourself in the position of the consumer of an argument, and must make some decision about the quality of its evidence, as well as when you are the producer of the argument, and desire to present the strongest evidence you can. I don't claim to have a magic bullet that will automatically show the truth about complicated issues. But I think you will be pleasantly surprised at how often this technique proves useful for

thinking through these issues, finding out where you stand, and even beginning the process of formulating your own arguments about them.

WHAT IS AN ARGUMENT?

One potentially misleading aspect in some of my examples above is that when it comes to controversial issues like abortion or the death penalty tempers can be high. And trust me, debates about curriculum or university policy can be just as emotionally explosive. There is a perfectly fine use of the word **argument** that basically means a verbal fight. Joe and Sally got into a terrible argument about his failure to do his share of the house cleaning. That is not what we will mean by the term, however. Sure, there will be times when arguments are very important, and disagreements about their strength or weakness will touch our emotions as much as our reason. There will be many other times, however, where arguments are simply there for our consideration, and we can assess them free of any passion or personal commitment. And, indeed as much as is possible, I would recommend adopting the more dispassionate approach, even when you feel strongly about what is at issue.

It is useful to see an argument as a complex arrangement of three quite different things. There will be what logicians call a **conclusion** – some theory, hypothesis, or position that the argument seeks to defend. There will be **premises** – facts, data, or evidence that the argument uses to support the conclusion. And there will be a relationship between the premises and conclusion whereby the conclusion **follows from** the premises. We can schematically represent an argument as follows.

e₁. Premise
 e₂. Premise
 e₃. Premise
 ...
 e_n. Premise
 =====
 t₀. Conclusion

Let's begin at the bottom. Every argument will have a **conclusion** – that's part of the definition of an argument. When we put an argument in what we will be calling its **schematic form** it will always come at the end, under the double lines (sometimes just a single line). But in the real world of arguments we should treat the term conclusion as technical jargon. Conclusions don't always come at the conclusion of a person's argument. Sometimes they come at the beginning.

Dick's cheating on Jane. He told her he had to work late, but Sally saw his car at Joe's Bar. Not only that, he leers at other women, and the last three times she called him he didn't answer.

Sometimes they come in the middle.

Charlie's take-home exam was word-for-word identical to Sarah's. Clearly, ***Charlie copied it from Sarah.*** The guy's a loser, never comes to class, and doesn't know how to write very well.

And, of course, some of the time they are at the end.

The light from virtually every galaxy is "red-shifted." This shows that every galaxy is moving away from every other galaxy. Therefore, ***the physical universe is expanding.***

I have used the lower-case letter, "t," in my schematic representation to stand for **theory**. The subscript, "0," is used to do two jobs. Although there is only one theory defended in the argument's conclusion (though, that single conclusion can be complicated and composed of many parts – "therefore, Jake did it, or helped plan it, or someone read his diary"), we will need to keep track of other possible theories besides the one defended in the argument. So "0" can be understood as the number zero and starting a sequence of numbered theories. But, the "0" can also be read as the letter, "o" and standing for **original** – the original theory or conclusion in the argument.

To standardize things, we will use the lower-case letter, "e," to stand for an individual bit of **evidence**. There are no set numbers of premises, or pieces of the evidence, in an argument. Sometimes there will be just a single datum, and sometimes there will be quite a bit of supporting data. The examples above illustrate not just that conclusions can come in many places in the statement of an argument, but that the same holds true the statements of the evidence.

Let's recast our schematized argument in terms of evidence for a theory.

e₁. Evidence (datum)
 e₂. Evidence (another datum)
 e₃. Evidence (another datum)
 ...
 e_n. Evidence (another datum)
 =====
 t₀. Theory

LOGICAL CONNECTION

We've said a bit about the top and the bottom in our schematic representation of an argument. What about those

conspicuous double lines? In good arguments the conclusion **follows from** the premises; the evidence **supports** the theory. What exactly is this relationship of support or following from? That turns out to be a very controversial issue in both philosophy and mathematical logic.

In some cases the relationship is **semantic**. If we just understood enough about the meanings of all the words in the premises, we would see that the conclusion has to be true. Often the examples are pretty trivial.

e ₁ .	The number is even.
e ₂ .	The number is greater than seventeen.
<hr style="width: 100%;"/>	
t ₀ .	The number is not prime.

Other times, however, there's quite a bit of information hiding in the premises, and the conclusions are a little surprising and quite significant.

e ₁ .	The figure is a plane triangle.
<hr style="width: 100%;"/>	
t ₀ .	The interior angles of the figure equal exactly 180°.

Arguments of the above type have a technical name. They are called **deductive arguments**. In a successful deductive argument, the relationship between the premises and conclusion (it's artificial here to call them evidence and theory) is a very special one. Logicians call it **validity**. Valid arguments are ones where, **if** the premises are true, the conclusion **has to be true**. We will use a single line between premises and conclusions to indicate an argument that aspires to be deductively valid. Many colleges and universities have whole courses on deductive (or symbolic) logic. Very sophisticated techniques are developed for determining

validity. We will not spend time reviewing this material because as interesting (and just plain fun) as it is, one almost never finds deductive arguments being put forward outside of academic philosophy and mathematics.

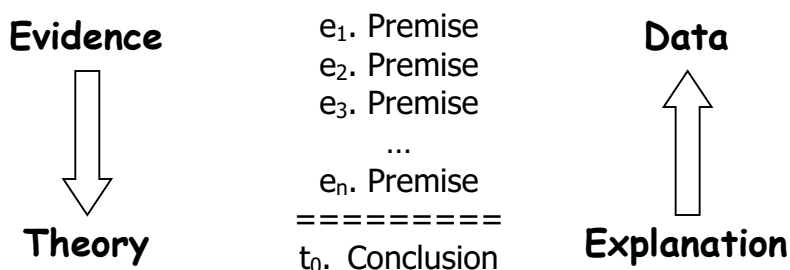
A second way of connecting premises to conclusions relies on the technical fields of mathematics and statistics. We cannot as conveniently ignore these arguments, since they play huge roles in contemporary science. Our approach to them, however, will be a little indirect. Rather than going through the basics of *probability theory*, and then developing statistical tests for making sense of numerical data, we will treat these arguments as special cases of *inductive arguments*. This jargon simply means that the argument claims that the conclusion *follows from* the premises, but *not* deductively. That is, it is possible for the premises to be true, yet the conclusion can turn out to be false. Now, of course, it should be relatively rare that in good inductive arguments, the premises would be true, and the conclusion false, otherwise these arguments will not be very useful. It is a matter of great controversy in logic, philosophy, and even the sciences, as to how we describe this relationship between evidence and theories. The rest of this book is devoted to showing you one way of characterizing this relationship.

INFERENCE TO THE BEST EXPLANATION

Consider the three short examples above. We had purported evidence that Dick was unfaithful – the leering, the excuse about being sick, the car outside the bar, and the missed phone calls. We had purported evidence about the copied take-home exam – the word-for-word identical submissions, Charlie's chronic absences, and his failures as a writer. Finally, we had the evidence about the expanding universe – the red-shifted light from distant galaxies. In each of these cases, the suggested theory *explains* significant parts of our evidence.

Charlie being a cheater doesn't explain his bad writing, but it sure helps us understand how the two exams ended up being the same. Dick's cheating (in a very different way) would explain why he was at the bar when he said he was sick. And an expanding universe explains the "Doppler shift" we observe in the light from galaxies.

This suggests a generalization. Suppose we treat the theory being defended in an inductive argument as an explanation of the data (at least some of the data) contained in the evidence. We get the following very symmetrical picture of an argument.



Inference to the Best Explanation assumes this general picture of inductive arguments. The relationship of **support** or **following from** becomes one of good explanation. Evidence for a theory is strong, or good, or sound if, and only if, the theory **best explains** the relevant data that is being offered as evidence. This definition of good evidence gives us a very useful device for testing purported evidence.

In the next chapter, I intend to lay out a kind of practical test for answering questions about the strength of arguments, about the quality of evidence. Does Connie have **good evidence** that her boyfriend was smooching Mary Jane during his absence at the record hop? Is there a **strong argument** that Charlie copied the take-home exam? Do astronomers **really know** that the physical universe is

expanding? We can only begin to answer these questions when we are in absolute agreement what the argument is in the first place.

A COUPLE OF ARGUMENTS FROM SHERLOCK HOLMES

Let's look at a couple of examples evidence that leads to a conclusion for Sherlock Holmes.

Here are the missing links of the very simple chain: 1. You had chalk between your left finger and thumb when you returned from the club last night. 2. You put chalk there when you play billiards, to steady the cue. 3. You never play billiards except with Thurston. 4. You told me, four weeks ago, that Thurston had an option on some South African property which would expire in a month, and which he desired you to share with him. 5. Your check book is locked in my drawer, and you have not asked for the key. 6. You do not propose to invest your money in this manner.¹

The beginning of "The Adventure of the Dancing Men" begins with a little case study in Sherlock Holmes' "deductive" method. Holmes' method, of course, is not deductive in the formal logician's sense, but inductive, or better, abductive. It is inference to the best explanation. Holmes possesses a fair amount of data.

- e₁. Watson had chalk between his left finger and thumb.
- e₂. He uses the chalk when he plays billiards.
- e₃. He only plays billiards with Thurston.
- e₄. He told Holmes four weeks ago that Thurston had an option on some South African property which would expire in a month.
- e₅. Watson's check book is locked in Holmes' drawer.
- e₆. Watson has not asked for the key.

Holmes explains all of this with the hypothesis that Watson has decided against the investment. Holmes goes on to explicate his reasoning with the metaphor of a chain.

You see, my dear Watson ... it is not really difficult to construct a series of inferences, each dependent on its predecessor and each simple in itself. If, after doing so, one simply knocks out all the central inferences and presents one's audience with the starting-point and the conclusion, one may produce a startling, though possibly a meretricious, effect. Now, it was not really difficult, by an inspection of the groove between your left forefinger and thumb, to feel sure that you did not propose to invest your small capital in the gold fields.²

Although I think it is clear that Holmes exaggerates when he claims that the inferences follow in sequential lockstep, the insight that explanatory reasoning often proceeds in steps, is important. Here is how I would schematize Holmes' inference.

- e₁. Watson had chalk between his left finger and thumb.
- e₂. He uses the chalk when he plays billiards.
- e₃. He only plays billiards with Thurston
=====
- t'₀. Watson played billiards with Thurston last night.
- e₄. He told Holmes four weeks ago that Thurston had an option on some South African property which would expire in a month.
- e₅. Watson's check book is locked in Holmes' drawer.
- e₆. Watson has not asked for the key.
=====
- t''₀. Watson has decided against the investment.

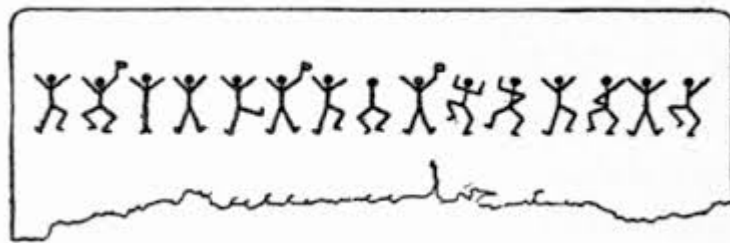
Each of these inferences are to (alleged) best explanations. t'_0 explains the chalk on his hand and is consistent with Holmes' background knowledge of Watson's preferences in playing partners. t''_0 explains the lack of a request for the key, and is consistent with Holmes' knowledge of what Watson told him four weeks ago, and the location of the check book.

But "The Adventure of the Dancing Men" is not really about chalk and South African investments; it's ultimately about murder and a couple of other mysteries that lead to the murder and its solution. Here's a link to a lovely webpage that includes the full text of the short story.

https://www.arthur-conan-doyle.com/index.php?title=The_Adventure_of_the_Dancing_Men

You'll enjoy the story, and it would be great practice if you paused here for a while, and tried your hand at schematizing Holmes's argument for what happened at Ridling Thorp Manor.

Consider, first, the mystery that gives the story its name. Holmes shows Watson a piece of paper with the following pencil markings.³



This is our first piece of evidence.

e₁. The dancing men document.

Watson immediately offers an account. "Why, Holmes, it is a child's drawing." Holmes thinks otherwise. The dancing men drawings "have a meaning," but they might be "arbitrary" (think "one if by land, and two, if by sea") or they might be "systematic" (a cipher). Holmes bets on the latter. His client, Mr. Cubitt, has provided more data.

e₂. Mr. Cubitt's wife, Elsie, received a letter from America that very much upset her.

e₃. Other dancing men inscriptions, both on paper and chalk applied to buildings, have turned up at Ridling Thorpe Manor.

e₄. Holmes has knowledge of the relative frequency of letters in the English language.

=====

t'₀. The dancing men figures stand for letters.
And the messages are in English.

Holmes breaks the code. He is now able to translate the different messages that have turned up.

This leads to the second mystery, why is Elsie so reticent to tell her husband about her past, why is she so upset and frightened by the dancing men messages, and why did she stop her husband from confronting the stranger they caught in the act of scrawling one of the messages? Holmes is in a position to answer many of these questions simply by decoding the messages he has. In addition, Holmes explains Elsie's reticence and fear in terms of some connection to criminal activities in her past, and he knows that the correspondent is named Abe Slaney. A cable to a colleague in the States confirms that Slaney is "[t]he most dangerous crook in Chicago." Slaney is imploring Elsie to return to him, and finally threatening her. Holmes and Watson have plenty

of evidence that necessitates hurrying to the Norfolk countryside.

- e₅. The contents of the messages.
- e₆. Slaney is the most dangerous crook in Chicago.
- e₇. Slaney's threat to Elsie.
- =====
- t''₀. Elsie, and perhaps Mr. Cubitt's, lives are in danger.

Sadly, they are too late. Immediately upon their arrival at the train station they learn of the tragedy.

"It's a terrible business," said the stationmaster. "They are shot, both Mr. Hilton Cubitt and his wife. She shot him and then herself -- so the servants say. He's dead and her life is despaired of."⁴

The stationmaster has, of course, not simply introduced crucial new evidence, but also offered an explanation. Holmes proceeds to the murder scene, interviews two servants, and examines the room where the bodies have been found.

- e₈. Cubitt is shot dead and Elsie is gravely wounded with a gunshot to the head.
- e₉. A revolver is found still containing four bullets.
- e₁₀. The servants report several things:
 - Both were awakened by the sound of a loud gunshot.
 - A short while later they heard a second shot.
 - The victims were downstairs in the study.
 - A strong smell of gun smoke in the study.
 - The study window was shut and fastened.

- The house was locked from the inside, and no one could have left.
- They were both conscious of the smell of powder from the time they awakened upstairs.

There are still several pages to go in "The Adventures of the Dancing Men," but Holmes has basically solved the case now. His reasoning is classic IBE. How and why did Mr. Cubitt and Elsie come to be shot? Why were the servants conscious of the smell of powder while upstairs? And what about the mysterious Slaney?

Holmes is particularly fascinated by the powder aroma upstairs -- "I commend that fact very carefully to your attention."⁵ Holmes' provisional hypothesis is that the window must have been open and the draft carried the smell. Careful examination of the study produces one last crucial bit of evidence.

e₁₁. A third bullet is discovered in the window-sash.

A third bullet! Someone else is involved! They examine outside the window and discover important new data.

e₁₂. Trampled flowers, large masculine footprints, and a spent cartridge.

But why only the sound of two gunshots? The first one was extremely loud. Might it "have been two shots fired almost at the same instant?"⁶ Holmes concludes "it was undoubtedly so."⁷

Holmes proceeds to entrap Slaney, and he confirms that he was one of the authors of the dancing men messages, and that he and Mr. Cubitt exchanged gunshots through the

window. The story never tells us precisely what happened to Elsie, but we know, just as Holmes knew.

t₀. Slaney sought to win Elsie back and was refused. He came to the manor and exchanged almost simultaneous gunshots with Cubitt. Elsie closed the window and, either heartbroken at the death of her husband, guilt-ridden and feeling partial responsibility, or misguidedly seeking to preserve her husband's good name, shot herself in the head.

SCHEMATIZING THE ARGUMENT

Maybe as you tried your hand at schematizing the above argument you had a glimmer of this, but let me state it explicitly. ***The single hardest part of argument analysis or the IBE recipe may often be simply identifying what the argument is in the first place.*** There are a number of reasons for this. First and foremost, people aren't always as clear as the might be when they state their arguments. But there are other complicating factors as well. My guess is that Conan Doyle would have said he wasn't presenting an argument at all, but simply telling a story. Still, I think it's clear that the story is about Holmes' following the evidence and coming to a conclusion about what happened. Add to all of that some arguments touch on deeply divisive moral and political issues and few of us read them and set our personal politics to the side. These unavoidable biases that we all carry with us will often tempt us to simply misread what the argument is. Finally, as we get a hint of in this short story, but becomes daunting when an argument is developed over the course of a whole book, the sheer number of words, thoughts, and sentences makes it extremely challenging to keep the structure of the argument clearly in mind.

Granted all of this, the first step in the IBE recipe is not only the most difficult, it is the most important. If we misrepresent what the argument is, then all of our work in analyzing it will be a waste of time. Who cares if you show “the argument” to be spectacularly successful, or a dismal failure, if it wasn’t the real argument in the first place?

Useful schematization requires three virtues, all of which defy simple characterization. First and foremost, as we have just emphasized, you should strive for **copy fidelity**. Your task is to represent “the other person’s argument,” a representation of his or her evidence. You may think of better ways to make the argument, or you may even think that the evidence points in a different direction. That’s all fine, and will be useful in later steps. Right now, however, your job is to faithfully represent the argument as it was stated. You want to also strive for **brevity**. We just saw how an argument might take up several pages of a short story, but just imagine when we look in a later chapter at Darwin’s “abstract” of his theory in **Origin of Species**,⁸ and try to keep straight all of the evidence presented in over four hundred pages. In order for your schematization to be useful to you, you will need to keep your representation of the evidence down to, say, no more than a page. Finally, and most difficult of all, you should strive for **charity** in your schematized arguments. You want to present the argument in the strongest form you can. This is not because you are being nice, or discounting the above virtue of copy fidelity. It is because you want to avoid at all costs weakening the evidence in the way you choose to schematize it. This is particularly important when you are dealing with arguments with which you disagree. If you come to the judgment that the evidence is weak, you need to make darn sure that you’ve given the evidence its best shot.

START AT THE BOTTOM [FIND THE CONCLUSION]

Since Step One in the recipe is the most difficult, and most important, we will indulge ourselves with a couple more subsections on how to do it, or more modestly, some hints for doing it better.

We've already discussed the fact that *conclusions* may come anywhere in a statement of an argument. Still, in the *schematic form* I am urging on you, they always come at the bottom, they are always identified as t_0 ("0" to start a sequence of explanations, and "o" as a reminder that this explanation is the original one), and they are always *explanations* of the data, not simply statements of the data. I strongly suggest that you begin your schematizing of the argument by trying to identify its conclusion.

Often times you will find hints in the statement that will guide you to the argument's conclusion. There are many words and phrases that are commonly used to alert readers or listeners that an inference is being drawn. Some of the classics you will find in any introductory logic book are: "therefore," "hence," "so," "it follows that," and many others. But at other times you are simply expected to pick out what the theory is that is supposed to be supported by the evidence. The best advice in these latter cases is simply to ask yourself something very general and vague like, "what's the point of all this?," or as suggested above, "what the heck is going on?" Once you have a candidate, now see whether it explains some of the data in the argument. If it doesn't seem to, you might want to look for another candidate as the argument's conclusion.

Two other general comments are appropriate here. First, don't get discouraged. This is hard stuff. It will get easier and more natural as you get more experience using the recipe. And secondly, there will be times when you fail to discover a

conclusion to begin your schematization because the passage of prose in front of you is not an argument in the first place. We obviously use language do lots of things – make simple assertions, push people’s buttons, or simply vent – stating an argument is only one use of language.

ENDNOTES

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- ¹ Sir Arthur Conan Doyle, ‘The Adventure of the Dancing Men’ in *The Return of Sherlock Holmes* retrieved http://www.gutenberg.org/files/108/108-h/108-h.htm#linkH2H_4_0003, June 2015
- ² Doyle, ‘Dancing’.
- ³ Doyle, ‘Dancing’.
- ⁴ Doyle, ‘Dancing’.
- ⁵ Doyle, ‘Dancing’.
- ⁶ Doyle, ‘Dancing’.
- ⁷ Doyle, ‘Dancing’.
- ⁸ Charles Darwin, *On the Origin of Species: A Facsimile of the First Edition*, (Cambridge, MA: Harvard University Press, 2001).