

The Five Pillars of Critical Thinking

There is a widespread view that critical thinking is primarily about logic and argument analysis. These are the sorts of skills that are tested, for example, in graduate and professional school admission tests — the LSAT (law school), GMAT (business), MCAT (medical school), GRE (graduate school), etc. And they are the focus of the various critical thinking assessment tools that have been developed for college and university audiences.

Logic and argument analysis are important skills, but it is a profound mistake to think that they constitute the core of critical thinking. It is very easy to be (1) very good at logic and argumentation, and (2) a severely impaired critical thinker.

If you want to understand how this can be so, keep reading!

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1. Introduction¹

The ultimate goal of critical thinking is to improve the quality of our beliefs, judgments and decisions.

That's easy enough to state, but it doesn't say much about what sorts of skills are part of critical thinking or what's involved in becoming a better critical thinker.

In the five points below I summarize how I approach these questions. The lectures that follow explore these topics in greater detail.

i. Critical thinking is multidimensional

Critical thinking is a multidimensional human activity. Minimally one can distinguish five component areas that are necessary for successful critical thinking. These are:

1. logic
2. argumentation
3. rhetoric
4. background knowledge
 - a. *of subject matter*
 - b. *of the history of debate on a topic*
 - c. *of the psychology of human judgment*
5. character (attitudes and values)

I have called these the “**five pillars**” of critical thinking. I should note that in the time since I first produced the video tutorials on which these lectures are based, I've revised my thinking and would add a sixth pillar to this list:

6. creativity

1. Note: the content in this section labeled “Introduction” was written specifically for this document and is not part of the video tutorial transcripts from which the rest of the content is drawn.

However, the content below reflects my original five-dimensional model of critical thinking. I elaborate on each of these components in later sections of this document.

ii. The components of critical thinking interact and depend on one another

Successful use of any single component often requires the use of other components. For example, recognizing whether to evaluate an argument as deductive or inductive (a *logical* distinction) might require *background knowledge* about the issue in question, and/or accurately judging the *intentions* of the arguer.

In general, successful application of critical thinking skills in real-world contexts is a holistic phenomenon, involving complex interactions among the various components, directed at and responding to the situation at hand.

Consequently, to develop as critical thinkers we need to cultivate skills in all the different components of critical thinking.

iii. Different situations demand skill in different components of critical thinking

Consider the critical thinking skills involved in (i) solving a logic puzzle, (ii) writing a letter to your boss requesting a raise, (iii) leading a team of soldiers into a battlefield, or (iv) assessing the latest media report on the safety of immunization vaccines.

Each of these situations places more emphasis on certain critical thinking skills and less on others. Skill in rhetoric, for example, plays no role in (i) but important roles in (ii) and (iii). Different types of background knowledge are more relevant in some contexts than in others (e.g. battlefield training vs. the safety of immunization vaccines). Some critical thinking skills are general and can apply in almost any situation, but others are highly context-specific.

Thus, the same person can be a good critical thinker in some contexts and a poor critical thinker in others, simply because different contexts require different skill sets.

iv. People differ in their competencies in each of the five dimensions

John is good at logic puzzles but is often unsuccessful at persuading people through argumentation because he has difficulty understanding the background positions and concerns of other people.

Darlene is good at argumentation but she focuses on “winning” arguments by pointing out the weaknesses of other people’s views, and is defensive and dogmatic about her own positions.

Kris is an expert on many topics in the physical sciences, and takes some pride in being scientifically literate. But he is prone to overconfidence in the breadth of his expertise, often making broad generalizations on topics in which he has no training.

These examples illustrate how people can vary in their critical thinking skills and deficits. This is another way that a person can be a good critical thinker in some contexts and a poor critical thinker in others. Or alternately, how in the very same context, one person can be a good critical thinker and another person a poor critical thinker.

v. Part of critical thinking is being able to assess what skills are required in a given situation and how to respond if you don’t have them

A given critical thinking context requires a particular set of skills to navigate successfully, since some critical thinking components will be more relevant than others. An important critical thinking skill is being able to (i) recognize which components are relevant to the situation and which are not, (ii) judge how well suited (or unsuited) your particular skill set is in relation to the critical thinking challenge posed by the situation, and (iii) respond in a way that appropriately reflects this understanding.

These sorts of skills are rarely discussed in the critical thinking literature, I suspect because it places so much emphasis on cultivating an awareness of our *limitations* and *weaknesses* as critical thinkers, rather than our strengths.

But this kind of self-awareness is an important part of the conception of critical thinking that I'm advocating here. It reflects a growing appreciation of the role of cognitive biases in the psychology of human judgment, and the many ways in which we are prone to error and irrationality.

* * *

Okay, that's a quick overview of the key ideas behind my approach to critical thinking. I'm sure you have questions about some of the concepts introduced here. In the lectures below I expand on these topics.

2. Logic and Argumentation²

Let's start back at the top and dig a little deeper into the first two pillars of critical thinking: **What exactly is logic, and how does it differ from argumentation?**

i. Logic is a Component of Argumentation

One way to think of this is to treat argumentation as the broader category and logic as an important component of argumentation.

The central organizing question for argumentation is, what does it mean to have good reasons to believe something? It's in the theory of argumentation that we try to answer this question. It's here where we define what an argument is and isn't, and try to come up with standards or norms for distinguishing good arguments from bad arguments.

Now, when we frame it this way, the theory of argumentation is actually a branch of philosophy — it's a subfield of the broader discipline that philosophers call "epistemology", which is the philosophical study of *knowledge*, and it intersects with another subfield of epistemology, which is the theory of *rationality*, of what it means to think and act rationally.

As you might expect, there's more than one way to tackle these questions. But there's general agreement that **if an argument is to provide good reasons for an audience to accept its conclusion, then it has to satisfy at least the following two conditions:**

- 1. the premises must all be plausible to the intended audience**
- 2. the conclusion must follow from the premises**

The first condition has to do with whether the audience has good reason to think the premises are true or not. The second premise has to do with the logical relationships between the premises and the conclusion.

2. The content in the remainder of this document this document is based on the audio transcripts of the video tutorial series "The Five Pillars of Critical Thinking". The videos and other critical thinking resources can be found at www.criticalthinkeracademy.com

ii. Logic: The Science of What Follows from What

This second condition is what LOGIC is all about. It's the discipline that deals with the question of *what follows from what*.

Let me give you an example. If I believe that "All swans are white", and my buddy Jack tells me he owns a swan, then I'm logically committed to the belief that Jack's swan is also white. Here's one way of writing an argument like this:

- 1. All swans are white.**
- 2. Jack has a swan.**
- Therefore, Jack's swan is white.**

If I were to deny the conclusion then I'd be contradicting myself, since if Jack's swan isn't white, then it can't be true that ALL swans are white. This is an example of *logical inconsistency* — *a set of claims is logically inconsistent if they can't all be true at the same time*.

The concepts that we just used here — the concepts of logical *entailment*, and of *consistency* and *contradiction* — these concepts are defined within the field of **logic**.

Now, an important feature of logical relationships is that they don't depend on the specific meanings of the terms involved. I can rephrase the example we just gave without referring to swans. If I believe that "All X are Y", and my buddy Jack tells me he owns an X, then I'm logically committed to the belief that Jack's X is also Y. And this will be true no matter what we substitute for X and Y.

- 1. All X are Y.**
- 2. Jack has an X.**
- Therefore, Jack's X is Y.**

Logical relations hold even when the claims involved are false. If I believed that "All rabbits speak Italian", and if Jack said he owned a rabbit then I'd be committed to the the belief that Jack's rabbit spoke Italian, and if I denied it, I'd still be contradicting myself.

These examples show that logical properties are really FORMAL properties, and when we're doing logical analysis of an argument, all we're doing is investigating the *formal* or *structural* properties of the *relationship* between the premises and the conclusion. We're not interested in the *content* of what's being asserted, or whether the claims involved are even true or not.

iii. An Example of Logical Analysis

Logical analysis can be a surprisingly powerful and versatile tool in argumentation. It's effective because it trades on our natural desire to avoid contradictions in our reasoning, and it's at the root of some standard argumentative techniques, like "proof by contradiction" or "reductio ad absurdum" (which is Latin for "to reduce to the absurd").

Here's an example. My friend Steven tells me that gay couples shouldn't have a legal right to marry because, in his view, this legal right is grounded on what he calls the "proper function of the institution of marriage", which in his view is to provide the healthiest and most nurturing environment for the raising of children, and more specifically, the biological offspring of the parents, since the biological family unit is the core of our social system. So, because same sex couples can't have biological offspring, their union can't fulfill the proper function of marriage, and therefore they shouldn't have a legal right to marry.

Here's a summary of this argument:

- 1. The legal right to marry is grounded in the "proper function" of marriage.**
 - 2. The proper function of marriage, as a social institution, is the raising of biological children.**
 - 3. Same-sex couples can't raise their own biological children.**
- Therefore, same-sex couples don't have a legal right to marry.**

Looking at this argument from a purely logical standpoint, we can say two things. First, *the conclusion does follow from those premises*. If we grant all of Steven's assumptions (and there are many) it does follow that gay

couples should not have the legal right to marry. This is a *logical* property of the argument.

And notice that *it has nothing to do with whether the assumptions are true or even plausible*. When we're doing logical analysis, we're only interested in what follows if we grant the assumptions.

Note also that in saying that the conclusion follows from the premises, we're not saying that the conclusion is true, or that the argument is a good one overall. It has good *logic*, but we haven't said *anything* about the *plausibility* of the *premises* yet.

The second observation we can make about the logic is that *the scope of this argument is actually very broad, much broader than Steven seems to realize*. Why? Because from the very same assumptions it follows not only that gay couples shouldn't have the right to marry, but *also that a good number of heterosexual couples shouldn't have the right to marry either* — most obviously, couples who are *sterile* or who are *too old to have children*. Why? Because without the possibility of having biological children, *their* unions can't fulfill the "proper function of marriage" either.

Now, in pointing this out, we're not challenging any of Steven's assumptions, we're just *drawing out the logical consequences of those assumptions*. Left as it is, Steven's argument entails certain conclusions that aren't very attractive. Steven is unlikely to accept the conclusion that we should deny sterile couples the legal right to marry. But if he's going to reject this conclusion then he's forced as a matter of brute logic to reconsider his assumptions. Otherwise he's guilty of *inconsistency* — *not all of his beliefs can be true at the same time*.

And here's an important point: **logic can tell us whether a set of beliefs is consistent or inconsistent, but by itself it can't tell us which belief to modify in order to remove the inconsistency**. That's a choice that Steven has to make, and he can have reasons for preferring one way over another, but which choice he makes won't be dictated by logic alone.

iv. Argument Analysis: More than Just Logic

Now, when we move to the level of *argument* analysis, we're not just analyzing the logic of the argument, **we're also assessing the truth or falsity of the premises themselves**. We're asking, are these assumptions plausible? Are they contentious? Do they need supporting evidence or argumentation to back them up? We're also asking whether the argument ignores certain facts or evidence that would count against it.

It's at the level of argument analysis that we would ask questions like, are we willing to grant that the legal right to marry should be grounded in a couple's capacity to have biological children? If this doesn't strike us as obviously true, what arguments could be given for it? How are legal rights normally grounded in our legal system? Should we distinguish between legal rights and moral rights in this case? And so on.

It's also at this level that we might want to consider *the most popular counter-arguments* in support of same-sex marriage, and see how the issues raised in those arguments might bear on the reasoning that Steven is using here.

So, to sum up, one way in which argument analysis differs from purely logical analysis is that argument analysis is also concerned with assessing the truth or falsity of the premises. In purely logical analysis we bracket this issue and just ask ourselves whether, if all the premises were true, would the conclusion follow?

3. Logic for Critical Thinkers

The main goal of this lecture is to help you better understand what's important about logic from a critical thinking standpoint.

Logic is a science, it's a technical discipline that you can study for its own sake, but *most of what professional logicians study is irrelevant for critical thinking purposes*. I want to help you figure out what's important about logic, what parts are important to learn and what parts you can safely leave to the specialists.

i. What You Learn in a Typical Formal (Symbolic) Logic Course

Let me start by describing the sort of thing you'll be taught in an introductory course in formal or symbolic logic. These are normally taught by faculty in philosophy departments. At most universities a student majoring in philosophy has to take a course like this, and in most MA and PhD programs students have to pass an exam on formal logic to get their degree. But you'll also find courses like these taught in computer science departments, and sometimes in linguistics departments if there's an emphasis in the program on formal linguistics, and in most mathematics departments there's at least one course in mathematical logic or foundations of mathematics that covers more intermediate and advanced topics.

So what are you taught in these classes?

Well, in your first class you'll be told that logic is the discipline that studies *principles of correct reasoning, rules for determining what follows from what*. More specifically, logic is concerned with providing *symbolic models* of correct reasoning.

What makes this kind of analysis possible is that reasoning is something that we do in language and through language. In language we can distinguish between **syntax** and **semantics**. *Syntax* is about the rules and relationships that underwrite the grammar of a language, how the symbols of a language combine to make meaningful, grammatically well-formed statements. *Semantics* is about how those symbols acquire

meaning in the first place, and how the meanings of statements relate to the meanings of the component parts of a statement, the basic symbolic vocabulary.

So, in language we can distinguish the *form* of a linguistic assertion from the *content* of that assertion. This form-content distinction is essential, because logical inference is about form, it's not about content.

One of the first things you do in a logic class is learn how to rewrite statements and arguments in symbolic form, so that you can then evaluate the reasoning on a purely formal level. How you do this depends on the kind of arguments you want to study. What you learn in a first logic course is that **there's more than one system of logic, there are multiple systems, and each of these systems captures different aspects of the structure of natural language and argumentation in natural language.**

ii. Categorical Logic

For example, you'll learn that the first formal system of logic was developed by Aristotle, and it's known as **categorical** logic, or the logic of **Aristotelian syllogisms**. Categorical statements are statements of the form "All A are B", "Some A are B", "No A are B", "All A are not-B", and so on. The As and the Bs refer to *categories* of things, so when I say "All whales are mammals", this statement expresses a relationship between the category of things that are whales, and the category of things that are mammals; namely, it asserts that the category of mammals contains, as a subset, the category of whales.

You'll then be taught a set of techniques for diagramming and evaluating arguments that use premises like this, usually a modification of the Venn diagram method to model the relationships between categories, and you can then see at a glance whether a categorical argument uses a valid or an invalid logical form.

iii. Propositional Logic

Now, an important limitation of Aristotle's system is that it doesn't really deal with compound statements like

"I'll have the chicken salad **or** the lasagna for lunch",

or

"**If** Jack finishes his homework **then** he can go to the movies".

Here we have statements that are made up of two smaller component statements ("A or B", and "If A then B", respectively). The truth or falsity of the whole compound statement depends on the truth or falsity of the component statements that make it up.

It was the Stoic philosophers in the third century BC who first worked out a system for reasoning with compound statements like this. This was the start of what we now call **propositional** logic, or **sentential** logic, and it's called this because the smallest unit of logical analysis is the whole statement, and we use letters to symbolize whole statements. So the statement "Jack finishes his homework" could be symbolized with the letter "H", and "Jack can go to the movies" could be symbolized with the letter M, and we could represent the conditional claim as "If H then M".

So in propositional logic, or sentential logic, we have a set of rules for evaluating what are called "truth-functional" arguments, arguments where the inferences turn on the truth-functional structure of the premises. I know that sounds very abstract, but the ideas are simple enough. They're what lie behind simple arguments like this:

"Either the brother is the murderer, or the girlfriend is the murderer. But the girlfriend was out of the country at the time the crime was committed. So it follows that the brother must be the murderer."

This argument has the simple form "Either A or B, not-B, therefore A", which is a valid argument form in propositional logic:

1. A or B

2. not-B

Therefore, A

It's the basic argument form used in any kind of detective or forensic or diagnostic work, where we use evidence to eliminate alternative possibilities.

iv. Predicate Logic

The next thing you'll learn in a symbolic logic course is what's called **predicate** logic. Predicate logic is related to categorical logic in that it too tries to unpack and symbolize the internal structure of propositions, in this case the relationship between subject terms and predicate terms.

So in predicate logic you might represent a claim like

"All whales are mammals."

as

"for all x, if x is a whale then x is a mammal"

and you'd use letters to symbolize the predicate expressions "x is a whale" and "x is a mammal". Then you'll learn a bunch of proof techniques for demonstrating whether arguments symbolized in this way are valid or invalid.

And that about wraps up most first courses in symbolic logic. You've learned three logical systems, Aristotelian categorical logic, modern propositional logic, and modern predicate logic. And you've learned how to symbolize fragments of natural language in each of these formal languages, rewrite arguments in symbolic form, and then evaluate the logical validity of those arguments using a variety of formal techniques.

You'll also be told that this is just the tip of the iceberg. There are many different formal systems in logic that are used to analyze different fragments of natural language. For example, we often talk about certain statements being necessarily true, or possibly true, and the logic that governs inferences that deal with these concepts is called "modal logic",

and we can go on and on -- there are “temporal” logics, “relevance” logics, “deontic” logics, and so on. These are the sorts of systems that professional logicians study.

v. How Much Formal Logic Do Critical Thinkers Need to Know?

It’s not hard to see how the study of formal languages and logical systems might be of intrinsic philosophical interest, and it’s not hard to see how it might be of practical interest to people working in computer science or artificial intelligence or formal linguistics or the foundations of mathematics. But what does any of this have to do with critical thinking?

Will learning how to symbolize sentences and prove theorems in any of these logical systems help you to become a better critical thinker? Will it help you do better at detecting bad arguments when you encounter them, and constructing good arguments of your own? Will it help you be a more persuasive speaker and writer?

My answer, you shouldn't be surprised to hear, is both “yes” and “no”.

Why no? Here are two reasons.

One reason has to do with the fact that we as *human beings are generally very bad at transferring skills that we learn in classroom exercises to applied contexts outside the classroom*. This is true across a wide range of disciplines, it’s been studied by learning psychologists for many years. You can teach a physics student how to solve problems using Newton’s laws of motion, but outside the classroom, when asked to reason about a real physical situation on the fly, they’ll often default to the physical intuitions about motion, force and inertia that they had prior to taking the class, which are much closer, it turns out, to Aristotle’s physics than to Newton’s physics. Most people with training in statistics don’t seem to fare much better than the rest of us at real-world tasks requiring reasoning about probabilities and uncertainty. And there are similar results in biology, economics, history, and so on. So this gives us some reason to question just how effective taking a single course on formal logic will be in improving critical thinking skills.

But a more specific reason for skepticism has to do with the fact that *most of the skills you learn in a formal logic class just aren't relevant to real world critical thinking contexts*. For example, in propositional logic you learn how to use the method of “truth-tables” to prove that an argument form is valid or invalid, but that involves actually constructing a table and looking at all the possible combinations of truth-values for all the different component propositions. What you're doing there is learning an algorithmic procedure for testing validity. Now, it's theoretically very interesting that you can do this, but it's not something you will ever find yourself doing in the real world. And there are tons of examples like this.

So these are some reasons to question whether a background in formal logic, by itself, is going to do much to improve your critical thinking skills. And I'm not the only one saying this. Here's a quote from philosopher John Heil, who is the author of a textbook on formal logic called *First-Order Logic: A Concise Introduction* :

I have thus far omitted mention of one reason widely cited for taking up the study of logic. By working at logic, we might expect to enhance our reasoning skills, thereby improving our performance on cognitive tasks generally. I have not emphasized this supposed benefit, however, because I am skeptical that there is much to it. The empirical evidence casts doubts on the notion that training in logic leads to improvement in ordinary reasoning tasks of the sort we encounter outside the classroom. (Heil, p. 4)

That's pretty sobering coming from the author of a textbook on logic. I understand his point. But I'm not quite as pessimistic as this. I think that some training in logic is essential for effective critical thinking. The important question is, which parts of logic are important for critical thinking, and which parts aren't, and why?

vi. Five Benefits of Studying Formal Logic

To answer this I'm going to list five real-world benefits, five ways that the study of logic can really improve your critical thinking skills.

1. You Learn Clarity and Precision in the Use of Language

Taking sentences in ordinary language and symbolizing them in logic might seem like a pointless exercise, but one thing this exercise does is make you aware that language does have a logical structure, and that seemingly minor changes in this structure can have a dramatic impact on the meaning of what you're saying. Studying formal logic (and this is universally true among the philosophers I talked to about this) **makes you appreciate and value clarity and precision in your use of language.** In argumentation you want to have control over what you're saying, you want to say exactly what you mean and mean exactly what you say, and a background in logic really can help you develop this awareness. I have students all the time who are surprised when I point out on a quiz or a test or an essay that what they meant to say is not what they in fact said, and the issue turns on the fact that, for example, they mistakenly think that "If A then B" means the same thing as "If B then A". A little formal logic can really help to sensitize you to these kinds of nuances in meaning.

2. You Learn Fundamental Concepts That are Important for Argument Analysis

A background in logic gives you **a basic vocabulary for talking and thinking about arguments.** When you study logic you learn a bunch of concepts that are central to argument analysis -- concepts like the difference between a valid argument and an invalid argument, a strong argument and weak argument, a sound argument and an unsound argument, a deductive argument and an inductive argument, and so on. With this vocabulary in hand you can ask questions that you could never ask before, you can devise strategies for refutation that you would never have considered before, and you can communicate this understanding to your audience in a more effective way.

3. You Will Master the Logical Properties the Most Widely Used Argument Forms

In everyday reasoning contexts **we generally use only a handful of really simple argument forms**, and these are commonly encountered in any study of categorical and propositional logic. Argument forms like “If A then B, A, therefore B”, or “Either A or B, not-B, therefore A”, or “All A are B; x is an A, therefore, x is a B”. If you master the logical properties of those common arguments forms, you have most of the tools you’ll ever need for doing logical analysis of real-world arguments. And you can teach these to twelve year olds, they’re not hard to learn.

4. You Will Master the Most Common Logical Fallacies

Once you’ve mastered this small handful of basic argument forms, then you’re in a good position to begin studying **fallacies of argumentation**, which no one disputes is important for critical thinking. Some of these fallacies are reducible to logical fallacies, and some aren’t. Now you’ll be in a position to understand the difference, which is important for getting a handle on the literature on fallacies.

5. You Will Understand The Fundamental Role that Consistency and Contradiction Play in Argumentation

I consider this the most important benefit of learning logic for critical thinking purposes. The central concepts of logic are the concepts of *consistency* and *contradiction*, and **these two concepts are at the heart of the relationship between logic and the psychology of persuasion**.

If we are made consciously aware that we hold inconsistent beliefs — beliefs that all together entail a logical contradiction — then our natural response, for one reason or another, is to recoil. We see that they can’t all be true at the same time, and we feel compelled to look for a way to restore the consistency of our beliefs, by rejecting or modifying one or more of them. **Logical persuasion relies on the fact that people do, in fact, internalize this principle of non-contradiction**. If we didn’t, if we encountered people who didn’t, who were generally happy to indulge in

self-contradiction when it was pointed out to them, then *it would be hard to see how they could be moved by rational argumentation of any kind.*

What the study of logic gives us is both a sensitivity to this fact, and a set of analytical tools that can help to reveal contradictory beliefs when they're there, by demonstrating to people the logical consequences of their own beliefs, consequences that they may not be aware of, but that can be shown by following a chain of reasoning.

Whenever I think of this aspect of logic my mind leaps to a quote from the Greek mathematician and scientist Archimedes, who said "Give me a lever long enough, and a fulcrum on which to place it, and I shall move the world." I think of logic in the same way, it provides the lever and the fulcrum that can move people from even the most stubborn position.

Now, I'm not an idealist about this, we shouldn't expect people to give up their most cherished beliefs just because they're shown to be inconsistent with other things they believe. They can restore consistency by making changes elsewhere in their belief system, and that's normally what they'll do. But the fact that they felt compelled to make a change at all is the point that I'm getting at here.

So, what's the conclusion of all this, what's the take-away message? The take-away message is that if you want to develop as an independent critical thinker, you shouldn't ignore logic, you should devote some time to studying elementary logic. But when you study logic your focus should be on understanding basic logical concepts, developing what I call "logical literacy", and mastering the small handful of basic argument forms that occur over and over again in real-world reasoning contexts. Just about everything else you'll learn in a formal logic course won't be of much direct use to you for critical thinking purposes.

At the Critical Thinker Academy I have a tutorial courses called "Basic Concepts in Propositional Logic" and "Common Valid and Invalid Argument Forms", which introduce what I think are the important logical

concepts, based on the criteria I just gave here. I don't cover proof methods or derivations, I focus on developing logical vocabulary and providing the foundation for understanding the handful of argument forms that we generally see over and over in argument analysis. Anyone taking a symbolic logic course will find this material very incomplete, but that's on purpose, I've intentionally selected the bits that I think are actually helpful from a critical thinking standpoint and ignored the rest.

4. Argumentation and Rhetoric

Just to recap, I'm working down my list of the five essential components of critical thinking: *logic, argumentation, rhetoric, background knowledge, and character*. My claim is that effective critical thinking requires that we develop some understanding and skills in all five components, because they're all mutually dependent — for any of them to work right, they need to work together as a team, so if you're weak in one area it hurts the whole team, not just that one area.

In this lecture I want to look at the relationship between **argumentation** and **rhetoric**, the second and third components on our list.

1. Two Traditions of Argument Theory

What's really interesting about argumentation is that **two very different disciplines want to claim argumentation as part of their respective fields**. *Philosophers* study logic and argumentation, they view it as one of the central tools of their discipline. I teach logic and argumentation in a philosophy department. But when I look outside my office window to the *English* department, they've got folks studying argumentation as well. They teach it in basic composition classes, and they have specialists in *Speech Communication* who study argumentation as a form of persuasive speech. Yet philosophy and english, or philosophy and speech communication, are very different fields. So what's going on here?

There's a way to tell this story that focuses on the long history of dispute between philosophers and rhetoricians over the proper use of argumentation in persuasive speech. On one side you have figures like Plato who, in some of his dialogues, seems to want to draw a sharp distinction between philosophical argumentation and the art of persuasion *per se*, and who has a fairly *negative view* of people who teach the arts of persuasion without any regard for truth or wisdom.

But then on the other side you have figures like Aristotle, Plato's most famous student, who writes books on logic and philosophical argumentation AND books on rhetoric and persuasive speech, and who

think that *there's actually a close relationship between the two, that in some sense they presuppose or are dependent on one another.*

The discipline of philosophy has, over most of its history, sided with Plato (it seems to me) but I'm on Aristotle's side on this one.

But I don't want to tell that long story. Instead I want to give you a simple way of thinking about what rhetoric is in relation to argumentation, and why **both the rhetorical tradition and the philosophical tradition are indispensable for the kind of argumentation that critical thinkers should care about.**

ii. Argumentation: Persuasion for Good Reasons

We'll start with a simple question. What is rhetoric? *Rhetoric is the art of persuasive speech.* When you study rhetoric you're studying how language -- in the form of speeches, writing, books, pictures, movies — any medium where symbolic communication of some kind is taking place — how any of these forms of discourse manage to be persuasive, how they influence the minds and actions of people.

If you're very skilled at rhetoric, then you're someone who knows HOW to use language to effectively persuade and influence. You understand your audience, and how to put them in a psychological and emotional state that is receptive and open to your message. You understand the speaking situation that you're in and what types of speech are most effective in that situation. You know how to deploy arguments to maximize their effectiveness, and you know when to switch gears and use other means of persuasion, like appeals to emotion or tradition, or whatever might be required to achieve your desired goal in that particular situation.

Studying rhetoric can help you develop these skills.

The problem, from a philosophical or a critical thinking standpoint, is that *this set of skills can be used for good or for evil.* They can be used to pursue knowledge and wisdom through reason, or they can be used to

suppress reason by appealing to emotion or tradition or group-think in a way that bypasses critical reflection.

Now, this is where a certain conception of argumentation rooted in the philosophical tradition steps in. Yes, argumentation is a part of rhetoric -- argumentation uses language to persuade. But the proper goal of argumentation from this perspective isn't JUST to persuade. **The proper goal of argumentation is to persuade FOR GOOD REASONS.**

Underline this in your mental notes. Not every argument that succeeds at persuading its audience is a GOOD argument. On the contrary, people are OFTEN persuaded by very BAD arguments, in the sense that the argument did *not* give the audience GOOD REASONS to accept the conclusion. This is the whole motivation for the study of fallacies — fallacies are argument types that are recognized to be bad, but that are often persuasive nonetheless.

Philosophy needs a distinction between merely persuasive arguments and genuinely good arguments, and critical thinking does too, for the same reason. Our goal isn't just to persuade. Our goal is to understand an issue from all sides with clarity, to understand the strengths and weaknesses of different positions on the issue, and eventually to get to the TRUTH of the matter, or as close as we can come to the truth. *Our goal is not to win arguments. Our goal is to understand ourselves and the world better.*

So, the image of argumentation that I want to leave you with is this. Imagine philosophy and rhetoric not as suspicious enemies, but rather as respectful partners, or even loving parents. And out of their blessed union comes argumentation, the child of philosophy and rhetoric.

From rhetoric we get a proper and realistic understanding of how argument can motivate, influence and persuade. From philosophy we get an understanding of what it means to persuade for good reasons, and what the proper goals of argumentation are, if we seek truth and understanding, and not just winning.

Unfortunately there aren't many critical thinking or argumentation texts that really embrace both perspectives. In the standard critical thinking texts written by philosophers trained in logic you won't see much discussion of rhetorical theory or rhetorical strategy. And in your standard rhetoric texts you won't see much discussion of theories of rationality and normative standards for good argumentation. You do see some discussion of fallacies, but they're usually not analyzed in the same way you would in a philosophy text.

So, if you want to get educated on argumentation and effective persuasion from the rhetorical tradition, you really need to diversify your sources.

5. The Importance of Background Knowledge: Critical Thinking's Dirty Secret

In this lecture I want to talk about the fourth item on our list of the five essential components of critical thinking, five areas of study or personal development that you need to pay attention to if you really want to develop as an independent critical thinker.

Just to review, our list includes logic, argumentation, rhetoric, background knowledge, and finally a certain set of attitudes and values. Here we're going to talk about the importance of **background knowledge** to critical thinking.

I titled this episode "Critical Thinking's Dirty Secret", but what I really mean is Critical Thinking *instruction's* dirty secret. For anyone who teaches critical thinking, or for the industries devoted to cranking out textbooks on critical thinking, *a guiding premise of the whole enterprise is that critical thinking skills can actually be taught*, and the crude version of this view is that *if students can master some formal and informal logic and some fallacies, they'll be better critical thinkers*.

The dirty secret of critical thinking instruction, which everyone knows if they've done it for a while, is that **while logic and argument analysis are necessary components of effective critical thinking, they aren't sufficient, not by a long shot**.

What's missing is the importance of *background knowledge*. Background knowledge informs critical thinking at multiple levels, and in my view it's among the most important components of critical thinking. But you can't teach background knowledge in a one-semester critical thinking course. Or at least, you're very limited in what you can teach.

That's the dirty secret that most textbooks avoid talking about. *The most important component of critical thinking can't be taught*, at least not in the way you can teach, say, formal logic and fallacies. Background knowledge comes from learning and living in the world and paying attention to what's going on. Mastering this component of critical thinking requires a

dedication to life-long learning, a genuine openness to different points of view, and a certain humility in the face of all that you don't know. This isn't a set of skills you can master with worksheets and worked examples. This is a philosophy, this is a lifestyle choice. Textbooks don't talk about this. Or at least not as much as they should.

There are at least two importantly different types of background knowledge that are relevant to critical thinking, and they each deserve attention. In this lecture I want to focus on background knowledge involved in evaluating arguments on a specific subject matter. Next lecture I'm going to talk about the kind of attitude you need to have if you want to really understand the background on all sides of an issue.

i. Background Knowledge of Subject Matter

Okay, let's remind ourselves of the basic elements of argument analysis. You're given an argument — it's a set of premises from which a conclusion is supposed to follow.

i. Argument Analysis: Does the Conclusion Follow?

Argument analysis involves two distinct steps. The first is evaluating the *logic* of the argument. When you're evaluating logic you're asking yourself, does the conclusion follow from these premises? The key thing to remember about this step is that it's an exercise in hypothetical reasoning. You *assume*, for the sake of argument, that the premises are all true, and you ask yourself, *if* the premises are true, how likely is it that the conclusion is also true? This is a question that you can answer using basic logical techniques — *you can teach this*. Students can learn to distinguish good logic from bad logic with textbook exercises, and they can learn to extract the logical structure of real-world arguments and evaluate the logic. If the logic is bad then the argument is bad. But if the logic is good, then we move to the second step in argument analysis.

ii. Argument Analysis: Do We Have Good Reason to Accept the Premises?

The second step is where you ask the question, but are the premises *in fact* true? Do I actually have good reasons to accept them? If we, or the intended audience of the argument, doesn't have good reasons to accept them, then we have reason to reject the argument, even if the logic is good, because we'll judge that it rests on faulty or contentious or implausible premises.

Now here's the point I want to emphasize: This step, where you assess the truth or falsity of the premises, *is not something you can teach in a logic or critical thinking class*. And the reason why is obvious. This is a question of *background knowledge*. Premises are judged plausible or implausible relative to your background knowledge, what you bring to the table in terms of your knowledge of the subject matter. **If you're ignorant about the subject matter then you'll make lousy judgments, it's that simple.**

iii. An Example: The Mars Hoax

Let me give you an example. We had a friend over to our house and she mentioned that she'd received an email about a spectacular appearance of Mars in the night sky that we should be on the lookout for some time in August. The claim was that *Mars was going to be so unusually close to the earth at that time and that it would appear as large as the Moon to the naked eye. It'll look like the earth has two moons.*

Now, my "bs" detector went off right away. I just knew this was false, there's *no way* that Mars is ever going to look as big as the Moon. Unless it's knocked out of its orbit, *it's astronomically impossible*. But our friend wasn't an amateur astronomer, it didn't raise any red flags for her, she didn't have any reason to doubt it. In this case, *her lack of background knowledge made her susceptible to a hoax, and no amount of training in formal logic would have made her less susceptible to this hoax.*

By the way, if you're interested (and I hadn't heard of this before this incident) if you google "mars hoax" you'll see that this has been circulating for quite a while.

iv. The Moral: All the Logic in the World Won't Make Up for Ignorance

The moral of this story is simple. If you want to become an independent critical thinker about a particular subject matter, you need to learn something about that subject matter. If you want to argue about Obama's health care plan you need to learn something about the plan and the economics and politics and ethics of health care. If you want to argue about how to address global climate change you need to learn something about the scientific and economic and political and ethical issues that bear on this question. And similarly for issues in history, religion, culture, media, science, philosophy — you've got to learn something about the subject matter. *All the logic in the world won't make up for ignorance.*

Now, I know this is easier said than done, but there's no avoiding it, no escaping it. *Critical thinking demands a commitment to life-long learning.* This is part of what it means to take responsibility for your own beliefs.

6. What Critical Thinkers Can Learn from Good Actors

Last lecture we talked about the importance of background knowledge for critical thinking. There are different types of background knowledge that are relevant to critical thinking in different ways. For example, let's say the issue I want to learn more about is whether there is any scientific support for ESP, extrasensory perception. My friend says there is, I'm not so sure, I want to know the scoop on this.

Well, one kind of background knowledge that I need to understand before I can properly evaluate this issue is disciplinary or *subject-matter knowledge* -- in this case I would need to learn something about the history of parapsychological research, the classic case-studies, the methodologies that are used to test paranormal claims, and so on. A trip to a good library can help out with this.

Another kind of background knowledge that is relevant is *the intellectual history of the issue*, and by that I mean an understanding of the different arguments and positions that have historically been influential in the debate. This has to include both the pro and con arguments, the views of both the defenders and the skeptics. Textbooks aren't always good at giving this, you might need to look for more specialized sources for this kind of information.

And a third kind of background knowledge that is relevant (for critical thinking in general) is a kind of meta-knowledge. This is knowledge of *how human beings acquire knowledge at all, of our strengths and limitations as critical reasoners, of how our minds work, of our cognitive biases and intellectual habits*. This is background knowledge related to the *psychology of belief and judgment*. In this case it would be relevant in helping us understand, for example, why belief in ESP is so widespread among the general public, but compelling scientific evidence for it is so much harder to come by.

In this lecture I want to explore in more detail what it means to acquire a good background in the *second* kind of knowledge, a good background in the *intellectual history of a debate*, a good familiarity with the pro and con sides of an argument.

i. Becoming Educated on an Issue

How should a person who is dedicated to critical thinking go about becoming educated about the different sides of an issue?

I want to argue that this task is in fact very demanding, much more so than we normally realize. I want to argue that this requires a certain kind of psychological orientation, that it requires an attitude of openness to different points of view that can be very challenging to sustain, but one that we absolutely have to cultivate if we're really serious about critical thinking.

Part of becoming educated on an issue involves learning how other people view that issue, and coming to some understanding of that point of view, even if it's not your own.

Let's say the issue is the environmental impact of human population growth. More people means more mouths to feed and more consumption of resources, and most environmentalists will tell you that there are natural limits to resource use, and when you hit those limits the results are bad — you get pollution, habitat destruction, species extinction, and degradation of the resource base that leads to poverty, political instability, and so on — bad stuff. So, one position is that population growth aggravates all these problems and therefore we should be supporting policies that curb population growth.

Now, in reading up on this question you might be surprised to come across people who think that restricting population growth is entirely the wrong way to address these environmental problems. You'll find people — smart people, educated people, who publish articles and books on this topic — who think that, in reality *there are no natural limits* to resource use; that the earth *can* sustain an increasing human population into the foreseeable future, and that, contrary to the popular consensus among environmentally minded people, human beings are actually on the cusp of an age of unprecedented prosperity and improvement in the human condition.

This couldn't be farther from the mainstream environmental position. And it may not be your position, your first reaction might be to dismiss it. But if you want to claim that you're critically informed about an issue, and you come across a position that may be diametrically opposed to yours, but that informed, intelligent people find compelling, then the intellectually responsible thing to do, I think, is to spend at least some time trying to understand why those people find it compelling.

ii. The Easier Way: Looking for Weaknesses in the Opposition Viewpoint

Now, how should we acquire this understanding? Well, there's an easier way, and there's a harder way.

The easier way is to set out looking for reasons why their position is faulty or mistaken, from your point of view. This is easier because it requires less intellectual work on your part. If the goal is just to identify areas of weakness in a position, frankly, that's not that hard to do. *Any interesting position is going to have weaknesses somewhere*; even your own, cherished views have weaknesses which a critic, if they wanted to, could exploit in a debate.

No, the danger with this approach is that *it's driven more by the desire to refute a position than to actually understand it*. By looking at a position through such a selective prism you're more likely to misrepresent it and deceive yourself into thinking you've understood it when you really haven't. You also run the risk of missing the odd kernel of truth or good idea that might be there, waiting to be acknowledged.

The underlying problem with this kind of oppositional investigative strategy is that *it's driven by the wrong kind of motive*. It's driven by the desire to win an argument. But that's not the goal of critical thinking. The goal of critical thinking is to take intellectual ownership of your beliefs and come to a closer understanding of the truth of the matter.

Now, if that's our goal, then there's a better way to try and understand positions that differ from our own. It's a more demanding way, but it's better.

iii. The Harder Way: Embracing the Perspective of the Opposing Viewpoint

The better way to do this is through an exercise in authentic role-playing. And this is where the title of this lecture gets its name, "what critical thinkers can learn from actors". Actors need to understand the background and the mindset and the motivations of the characters they play if they're to play them with authenticity and integrity. Good actors need to be able to slip into the skin of a character and view the world through that character's eyes, even if those eyes are very different from their own. They need to cultivate the ability to empty themselves, to forget who they are, temporarily, so that another persona can live through them.

As a critical thinker, you need to cultivate a very similar set of skills. You want to understand an argument or a position that someone else strongly believes. Then you need to try, as best you can, to put yourself in that person's head-space. You need to identify the beliefs and values and background assumptions that really motivate their position. You need to dwell in that position for a while. And then, from that position, you need to be able to faithfully reconstruct the reasoning that leads to their conclusions.

The test of your understanding, the *real* test, is to be confident that *you could explain the reasoning of the other position to a proponent of that position, to their complete satisfaction*. If I'm a religious believer arguing with an atheist, and I want to engage them in a productive discussion, I want to be able to sit across from them and articulate the rationale for their atheist position, and their objections to theism, to their satisfaction. You want them to be able to say, afterward, "yes, you understand my position; that's exactly why I hold the beliefs I do". *That's a position of true understanding, and that's also, as it turns out, the position with the greatest potential for rational dialogue and persuasion.*

So, background knowledge requires not just that we understand the foundations of our own position. It also requires understanding the foundations of positions different from our own. And to achieve this, we need to cultivate a willingness and an ability to see the world through other people's eyes.

Now, I'm the first to admit that this kind of understanding can be difficult to achieve. We don't always find it easy to put ourselves in other people's shoes, especially the shoes of people we disagree with. And it's harder to do the more important the issue is to us. We naturally feel protective of the beliefs that we regard as central to our identity, and dwelling for any length of time in the mind and point of view of someone who doesn't share those beliefs can be challenging on many levels. But it's the kind of understanding that we have to strive for, if we're really serious about critical thinking.

This issue is also a good illustration of a point I've made in previous episodes but hadn't yet discussed much. The fifth item on my list of five essential components of critical thinking is "Character", or "Attitudes and Values", and this is a good example of the sort of thing I'm referring to when I talk about attitudes and values. In this case, in order to ensure that we have a proper understanding of all sides of an issue, we have to value truth and understanding above winning, and we have to adopt a certain attitude toward alternative viewpoints and the people who hold them.

And this attitude is more than just respect. Respect might be a necessary attitude to have if we want to really understand a position, but it's definitely not sufficient. For genuine understanding we need something more intimate, a kind of openness and an authentic intellectual curiosity about how other people view the world. I don't have a good single word to describe this virtue, but I hope I've conveyed a sense of what's involved in it and why it's important for critical thinking.