





The Thirty-Eight Lessons on How to Recognize Bad Reasoning Detective

by Nathaniel Bluedorn & Hans Bluedorn

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Any resemblances in this book to any person, place, or thing – living or dead – just might be on purpose.



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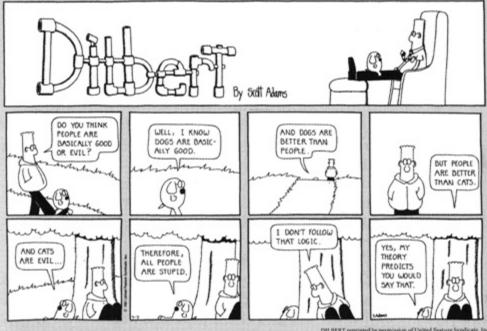
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Introduction



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What Is a Fallacy?

A fallacy is an error in logic – a place where someone has made a mistake in his or her thinking.

DAD: People just don't use their heads anymore.

JOHNNY: I don't know about that, Dad. I use my head a lot playing soccer.

Dad and Johnny are talking about two different ways of using heads.

This book is for detectives – fallacy detectives. We've designed this book to be a handy manual for spotting the fallacies you meet in the street, in the newspaper, or in yourself. The goal of this book is to help answer the question: What is bad reasoning? We also hope you will find that using your head is fun.

To begin this book, we first show why it is important to stretch and exercise your mind. Then we divide the most common errors in reasoning into three sections: avoiding the question, making assumptions, and statistical fallacies. We explain how you can spot these errors, and we give exercises in fallacy detection. This is followed by a section on the propaganda techniques used by advertisers and politicians. The book ends with The Fallacy Detective Game, where you can have fun with your friends who have been learning logic with you.

When you complete this book, you should

- know how to spot bad reasoning;
- 2. put a higher value on good reasoning;
- 3. know how to avoid fallacies in your own reasoning.

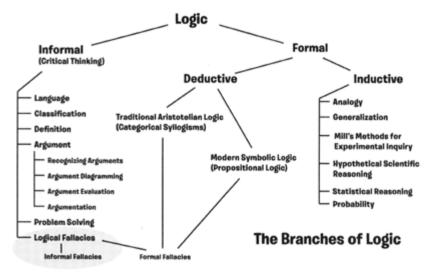






Illustration by Rob Corley

Thousands of years ago, the Greek philosopher Aristotle began to study and categorize the errors in reasoning he saw. People have found logical fallacies to be the most interesting and useful parts of logic.



We are indebted to James B. Nance for part of this diagram.

As you can see by the circle in this diagram, we do not cover all branches of logic in this book. All of the other branches – including syllogisms, scientific reasoning, argumentation, etc. – are very useful. But we chose informal logical fallacies as the focus of this book.

Lessons

This book is for students aged twelve and up. Adults can use this book too.

We designed the lesson format for both private and classroom use with exercises for many levels of difficulty.

We recommend that you work through this book in a group of two or more people. There is something about multiple people discussing their agreements or disagreements which brings out so much more in the lesson. Each person may want to read the lesson independently, and then talk through it together. However, you can work through this book independently too.

Read each exercise and write your answer in the space available. You can check yourself with the answer key at the back of this book.

If you have trouble understanding a lesson, do the exercises anyway. We designed the exercises to be a teaching tool, so you may catch in the exercises what you did not understand in the lesson. If you miss many of the exercises and you do not know why, you may need to repeat that lesson until you understand it. If you still don't understand something taught in this book, try discussing it with your study group or other people.

We wrote The Fallacy Detective test so teachers can check that their students have paid attention in class. Teachers will find this test at our web site too.

Many teachers suggest that *The Fallacy Detective* is equivalent to approximately one or one-half high school credit in logic or critical thinking.

For more tips on how to use this book in a classroom or to ask us questions, visit our web site www.fallacydetective.com.

The Inquiring Mind



Electration by Tim Hodge

Lesson 1

Exercise Your Mind

Our dad and mom always wanted us to grow up with "inquiring minds." We'll introduce you to some of the things that they taught us.

The first problem that we need to address is this: some of us don't like to use our minds – period. Everyone loves to have fun, and some of us even love to work. But we all try to avoid using our minds as much as possible. Hopefully, we can change that.

MOTHER TO HER SON: Dad and I have been talking, and we feel that it isn't good for you to spend so much time playing video games. We feel that, as your parents, we should help you develop your mind...

JOHNNY: Whoa! Cool! Get this! I'm on the seventy-second level, and the Zygon clone monster is going to eat my neutrino grenades...

MOTHER: Could you pause that game for a moment? I'm trying to talk to you about your future.

JOHNNY: What if I want to be a fighter pilot when I grow up. These games help hand-eye coordination.

мотнея: It's hard to talk to you rationally while...

JOHNNY: Hang on, I'm coming to where I have to jump and shoot at the same...

MOTHER: I've been doing some reading about what video games do to the brain. They've done studies that show that...

JOHNNY: Yikes! He almost got me!

Johnny's mother is trying to get Johnny to engage his mind, but that is exactly what Johnny doesn't want to do. He is having fun, and his game is using as much of his mind as he wants to use.

When a person gets old enough to realize how short his life is, he begins to realize how valuable it would have been if he had learned wisdom early in life.

If there is only one thing you learn from this book, we want to inspire you to exercise your mind – and not let it get fat and flabby.

FARMER ED: Like I told your father, your aunt Mabel and I haven't made a profit from the farm for years now.

YOUNG NEPHEW BACK FROM AGRICULTURAL COLLEGE: Why don't you try changing some of the ways you do things on your farm?

FARMER ED: I think I'll just stick to what I've got going right now. I don't have the patience to try this new system you're talking about – I'd have to unlearn a lot. Your grandpa always said you can't teach an old dog new tricks. I like your optimism – farming needs people like you – but we're pretty settled here at the farm.

Farmer Ed looks at his nephew's new ideas, and he sees too much hard mental work. He doesn't believe he has the energy to rethink all that he's learned about farming. Farmer Ed might be willing to do the physical work, but it takes mental work to change, and that's what he's afraid of. Thinking is hard work.



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The mind is like a muscle. It needs exercise too.

We must discipline our minds the same way an athlete exercises his body. We must exercise our minds so that it does not hurt anymore when we try to use them. This is the first quality of an *inquiring mind*.

Exercises

Read the following examples and decide if the person probably: (a) doesn't want to exercise his mind, (b) has an inquiring mind, or (c) none of the above.

1.	SURFER DUDE: Hey, man. Like, I'm never going back to school. These
	waves are, like, so much more cool. I just can, like, spend my whole life
	here, man. Like this is the, like, life, man.

a b

A LITTLE CHILD: I can't put my toys away.... I don't remember where they go.

a b c

TED: Don't make me go into town to pick up groceries. There's a foot of snowfall since last night, and it will be a pain to shovel out the driveway again.

a b

BRADLEY: My grandpa tried to get me to go to one of those political debates again.

WESSON: Yeah? You mean between the guys running for mayor? What'd you tell him?

BRADLEY: He knows I don't go in for that stuff. I don't get what they say. Like, uh, who wants to?

a b c

MARIO: I like reading two different newspapers that report the same event. That way I see the issue from two perspectives.

a b c

6.	BLAINE: C	Oh, Da s, and	d, do I l my alle	nave to? I rgies both	hate mo er me.	wing the la	wn. I get co	overed
		a			ь		с	
7.	KATE: I ha						reading so	me book
		a			ь		с	
8.	веnny: If library fir		t finish			3000	l have to pa	ıy a
		a			ь		с	
					600			

Lesson 2

Love to Listen

This lesson is about listening and the benefits that come from listening.



Illustration by Rob Corley

At the county fair, Bob joins a circle of guys having a discussion. He catches the words "drives them up" and interjects his thoughts on what's driving up corn prices.



After several minutes, Bob pauses. The guys try to imagine where he is coming from – they'd been discussing differences between men and women drivers when Bob joined them.

Bob chalks their silence up to shyness and starts explaining little-known factors that affect the price of corn.



Illustration by Rob Corley.

Bob becomes more and more animated – he thinks they don't get his point. Finally, one guy mumbles something about feeding his pigs and strolls away. Everybody else does the same.

What is Bob's problem? Does Bob talk too much? People who know Bob might agree. However, is it possible that his problem is deeper? Can it be that Bob simply does not like to listen – that he enjoys telling people what he thinks more than he enjoys listening to what they have to say?

A person who is humble and who loves to listen may show these characteristics:

- He is more interested in hearing what other people have to say than in having them listen to him. Humility brings respect for others and for their thoughts.
- 2. He places a modest value on his own opinions he admits that other people often have better ideas than he does.
- 3. He willingly admits when he doesn't know something. If he doesn't understand something, he is open about it.
- 4. He is willing to question his own position on an issue.

If a person shows these qualities, then he may be someone who loves to listen. And being a person who loves to listen is another ingredient in an inquiring mind.

Exercises

a

	re the people in the follo) showing that they don		ring that they love to lister ther?			
1.	GARY: I know I'm right that I'm not right.	GARY: I know I'm right. I don't need to listen to you try to convince me that I'm not right.				
	а	b	с			
2.	BETTY: Jabber,	abber. You just talk and e some peace and quiet?				
	а	b	c			
3.	ster. He now says, "We		op, to his coworker Web- polize our discussion. Do ly got a few seconds."			
	а	b	c			
4.	JERRY: This music is so loud that it's blowing out my eardrums. Could you turn it down a bit?					
	a	b	c			
5.	BILL: I'm plugging my cal statements about m		r another one of your criti			

b

c

6.	лм: I need to stop listening to my friend Nat. I'm beginning to care too
	much about what he thinks. I'm a real man. I have a right to my own
	ideas. What do I care? I need to make my own decisions in life.

a b

 PATTY: I just have too many opinions, and I know I jabber on about them too much. My opinions get in the way of learning. I need to just listen more and be more willing to accept other people's ideas.

a b c

Lesson 3

Opposing Viewpoints

When we are forming an opinion on an issue, it is often a good idea to collect other people's viewpoints on it. The more viewpoints we hear, the better we understand the whole picture.



Illustration by Rob Corley.

Oscar just knew he was right. He didn't need to read about all of those other viewpoints. Oscar knew they were all wrong. The group Oscar was with – called the Flat Earth Society – made sure its members knew why other positions were wrong. The international headquarters published many little booklets which explained everything in simple language. Sometimes Oscar

wondered how people could believe that the world was round – and not flat, as his group taught. Oscar figured that most people were just stupid and didn't think about what they believed.

Dr. Weednut, a leading figure in the Flat Earth Society, had an entertaining way of explaining why society has deceived itself into believing that the Earth is round when everyone can see that it is obviously flat. Oscar liked Dr. Weednut the first time he met him. He stimulated Oscar to think, and he made thinking seem so easy. Oscar was glad he had someone whom he could trust to explain everything to him.

Oscar is not honestly evaluating both sides of the issue firsthand. He isn't studying things for himself. He has only listened to one side of the issue – the Flat Earth side. No wonder his side makes sense to him. Any side may seem logical if we only see things from that one point of view.

Many Counselors

When we want to make a decision about something, it is often good to ask for advice from several people. Also, if many people gave us their advice but they all agreed with each other on everything, then we would learn nothing new. That's why we need to listen to advisors who disagree with each other. By hearing a wide range of opinions, we are better able to choose the best advice.

Wilby had a problem. He didn't know which brand of toothpaste to buy. He decided to try this new opposing viewpoints idea he'd been reading about in *The Fallacy Detective*. He decided to go around and ask different people what they thought.

WENDY, A STORE ASSISTANT WHO OFFERED TO HELP: This type with oxywhite pro is guaranteed to make your teeth whiter in twenty-four hours. (Wilby noticed that toothpaste brands with the oxy-white pro sticker were twice the price of other brands.)

PHOEBE, A FRIEND OF WILBY'S: Wilby, I think you'd have such a cute smile if you got rid of some of those blueberry Popsicle stains on your teeth.

JUDD, ANOTHER FRIEND: Toothpaste? What's that? Real men don't brush their teeth.

WILBY'S MOM: Wilby, it really doesn't matter, as long as you don't buy anything that contains fluoride additives. You might come down with a terrible disease in a few years if you use fluoride.

AUSTIN, WILBY'S COWORKER: I only use Hug-A-Tree brand. It's made by an environmentally conscious company from Denmark. They promise they don't test their product on whales.

BOB, WHO WORKS OUT AT THE HEALTH CLUB WITH WILBY: I heard on a talk show that if you chew organic mint leaves, then your breath will smell good without having to brush your teeth.

Wilby concluded that he was worrying too much over nothing. He decided to keep using the brand of toothpaste he'd always used. It seemed to do the job. But now he understood more about how different people make their decisions.

We gain two benefits from looking at opposing viewpoints:

- We can change our views if we are wrong. We would never have this
 opportunity if we listened only to things with which we agreed.
- We can better help others. When we study a viewpoint which is wrong, we still learn many things. It helps us to understand how to defend our own views, and it helps us to communicate our views to others.

No one has the time to evaluate every viewpoint on every issue, but we can try to learn more about alternative views. This is another part of having an *inquiring mind*.

Exercises

In the list of issues below, try to think of at least two sides to each issue. Some of these are well-known opposing viewpoints. If you find a different pair of opposing viewpoints than we do in the answer key, that is all right. We have done the first one for you.

1. The Civil War

Example: the view of the Union and the view of the Confederacy

2. The reasons for the American Revolution

3.	Taxes
4.	The existence of God
5.	Baseball teams
6.	Breeds of dogs
7.	Gun control
8.	The origin of the universe and of life
9.	Slavery in America before 1860
10.	Logic
11.	Should little boys take baths?

12. The color pink

Avoiding the Question









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Lesson 4

Red Herring Fallacy

Consider the following conversation:

JENNY: Girls are much smarter than boys. BERT: Oh yeah. How do you know that?

JENNY: Because they just are. BERT: But how do you know it?

JENNY: There are lots of girls who have done lots of smart things. Our neighbor Mrs. Jones is pretty smart; Joan of Arc saved the French from the English; and Madame Curie invented the light bulb.

BERT: But how do you know they are smarter than boys?

JENNY: Because there are many girls who have high IQs. That makes them smart.

BERT: You still haven't answered the question. Why are girls smarter than boys?

JENNY: Well, I'm smart and you're dumb. That proves it.

It should be clear that Jenny isn't really answering the question. She is saying things that sound like they answer the question, but they don't. She is trying to prove that girls are smarter than boys, but she is only showing that some girls are smart and says nothing about how smart boys are.

It isn't that she is saying things that aren't true (except for the part about Madame Curie). But she isn't answering the real question of "why are girls smarter than boys?" If she were to really answer the question, she could say something like:

JENNY: Girls are smarter than boys because it has been proven that the average IQ of a girl is higher than the average IQ of a boy.

You see, when we argue, it can be difficult to stay on the topic – to answer the question we are arguing. It is easy to introduce something irrelevant into the argument. Also, it can be even more difficult to notice when somebody else is straying from the topic and introducing something irrelevant into the argument.

Whenever we introduce something irrelevant into an argument, we are avoiding the question.

Red Herring

When someone is avoiding the question and asserting something irrelevant, we say they are introducing a *red herring* into the argument. A red herring is a dead fish – a dead fish that has started to become "ripe" and smelly. Dog trainers used red herrings to train their tracking dogs. They would lay out a scent trail of a raccoon (or whatever they wanted the dog to learn to track) and let the trail become old, then they would drag the red herring (which by this time was very "ripe" and smelly) across the trail and off in a different direction. Then they would train the dog to stay on the raccoon's scent trail and ignore the red herring's scent trail. So, a red herring is a distracting scent trail. In our context, a red herring is an irrelevant topic which distracts us from the real question.

A red herring introduces an irrelevant point into an argument. Someone may think (or may want us to think) it proves his side, but it really doesn't.

I am sure this has happened to you before: you are talking with somebody about something you disagree on, and after a while you realize that you aren't discussing the thing you started out discussing. This is because somewhere in the argument, somebody introduced a red herring, and you have been arguing about the red herring ever since.

JENNY: I think boys should always open doors for girls.

BERT: Why?

JENNY: Because that is the gentlemanly thing to do.

BERT: Why is that the gentlemanly thing to do?

JENNY: Because it is very helpful for the girls.

BERT: But wouldn't it also be a helpful thing for boys if all the girls opened the doors for them? Why don't all the girls open the doors for boys?

JENNY: Because that isn't right. This afternoon, when we were coming out of the grocery store, I had several bags in my hands, and I had to put them all down to open the door just because you were too rude to help me.

BERT: I couldn't help you open the door because I was out in the parking lot waiting in the car.

JENNY: See what I mean? You were too inconsiderate to think that I might need some help when I came out of the grocery store. I think that was very ungentlemanly.

BERT: I didn't know that you were going to buy so many groceries; otherwise I would have.

JENNY: You should have thought of that.

Do you notice that Bert and Jenny aren't arguing anymore about whether boys should open doors for girls? Now, they are arguing about whether Bert should have opened the door for Jenny that afternoon. This is because Jenny introduced a red herring into the argument, and Bert didn't notice. Bert should have said something like:

BERT: Maybe I should have opened the door for you today, but how does that show that boys should always open doors for girls?

To properly answer the question, Jenny could have said:

JENNY: Because girls have smaller hands than boys, so they can't turn doorknobs as easily.

While there are some better arguments for why boys should open doors for girls, this one at least addresses the topic.



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Calvin is introducing some red herrings here.

What he says has nothing to do with whether his dad should retrieve the ball.

Not a Red Herring

When somebody says "I don't know" and doesn't answer the question, he is not introducing a red herring. He is still addressing the topic – he just doesn't have an answer.

SON: What is the square root of 234.09667?

FATHER: I don't know. Why don't you go figure it out on a calculator?

The father here is addressing his son's question. He just doesn't know the answer.

Exercises

In the following examples, is the speaker addressing the question and staying on topic? If he isn't and he is introducing something irrelevant, shout "RED HERRING!" at the top of your lungs.

 son: Why can't I go see the movie The Day of the Spatulas with my friends?



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What is a fallacy?

A fallacy is an error in logic - a place where someone has made a mistake in his thinking.

This is a handy book for learning to spot common errors in reasoning.

- For ages twelve through adult
- Includes The Fallacy **Detective Game**

PERSONAL ATTACK FALLACY



Can a shrimp like this run our great country?