

You're either part of the solution or you're part of the problem
– Attributed to Eldridge Cleaver, 1968

Over time it's going to be important for nations to know they will be held accountable for inactivity.
You're either with us or against us in the fight against terror.
–George W. Bush, 2001

1. Dichotomy: Genuine and False

A **genuine (true) dichotomy** is a set of alternatives that are both *mutually exclusive* and *jointly exhaustive*.

A set of alternatives **A** and **B** are *mutually exclusive* if and only if no member of **A** is a member of **B**. For example, with respect to the positive integers $\{1, 2, 3, 4, \dots\}$, the **odd integers** and **even integers** are mutually exclusive for no odd integer belongs to the set of even integers, and vice versa.

- *Example #1:* **cats** and **horses** are mutually exclusive as no cat is a horse and no horse is a cat.
- *Example #2:* **hungry people** and **sad people** are *not* mutually exclusive as there are some hungry people who are sad.

A set of alternatives **A** and **B** are *jointly exhaustive* of some group **C** if and only if every item in **C** consideration belongs to either **A** or **B**. For example, with respect to the positive integers $\{1, 2, 3, 4, \dots\}$, the **odd integers** and **even integers** are jointly exhaustive as every positive integer is either odd or even. In contrast, *greater-than-5* and *less-than-5* are *not* jointly exhaustive for the positive integers since it is not the case that every integer must be one of these two alternatives (the integer 5 is not accounted for).

- *Example #1:* if you are at a grocery store, **paper bags** or **plastic bags** are jointly exhaustive of the free bags supplied to you by the grocery store.
- *Example #2:* if someone gives you a list of beers at a bar, this list is exhaustive of the beers (unless they have a secret stash).
- *Example #3:* **cats** and **horses** are *not* jointly exhaustive of animals as there are some animals (e.g. dogs) that are neither cats nor horses.

Typically, “either/or” statements (e.g. either **A** or **B**) are used to express dichotomies.

1. **Either** John is a brain-eating zombie **or** he is a friendly zombie.
2. The economy will **either** get better **or** it will get worse.
3. **Either** Obama will win the election **or** Romney will.
4. **Either** an integer is odd **or** it is even.

Genuine dichotomies expressed using “either/or” statements are *always* true:

“EITHER **A** OR **B**”

EITHER JAMES IS A CAT OR HE IS NOT A CAT.

If **A** and **B** are *jointly exhaustive* of **C**, then for any item in **C** you could consider, it *must* be either **A** or **B** (at least one).

If cat and not-a-cat are exhaustive of all the things that James can be, he must be either a cat or not-a-cat (but he might be both!)

if **A** and **B** are *mutually exclusive*, both **A** and **B** cannot both be true at the same time

If James is a cat, then he cannot be something that is not a cat. If James is not a cat, then he cannot be a cat.

However, not all either/or statements express genuine dichotomies. In fact, some *pretend* to express genuine dichotomies **but they are not mutually exclusive** while others express dichotomies **but they are not jointly exhaustive**. We will focus on the latter case.

A **false dichotomy** is a dichotomy where **A** and **B** are not exhaustive of the *relevant* alternatives, and so it is genuinely possible that both **A** and **B** are false as some alternative **D**, or **E**, or **F** is true.

In short, a false dichotomy is a dichotomy where neither **A** nor **B** is true since it is a real possibility that some other alternative **D** is true.

EXAMPLES OF FALSE DICHOTOMIES

- 1 **Either** John is a brain-eating zombie **or** he is a friendly zombie
Alt John is an unfriendly zombie who doesn't eat brains.
- 2 The economy will **either** get better **or** it will get worse.
Alt The economy doesn't get better or worse, it stays the same.
- 3 Obama will destroy the country **or** save the country
Alt Obama does neither; the country just plugs along as usual.
- 4 You love me **or** you hate me.
Alt You are indifferent.

Exercise Set #1

A. First, write down an “either/or” statement that expresses a false dichotomy. Next, be able to explain why it is a false dichotomy by pointing out how the alternatives considered could both be false as some relevant alternative that could be true.

2. The Fallacy of the False Dichotomy

Reasoning with a genuine dichotomy is an effective way to establish the truth of a conclusion. First, note that arguments of the following form are deductively valid:

DISJUNCTIVE SYLLOGISM

- P1 Either **A** or **B**
- P2 **Not B**
- C Therefore, **A**.

Notice that while it is impossible for P1 and P2 to be true and the conclusion false, we do not know if P1 and P2 are, in fact, true. Second, if P1 were a genuine dichotomy and we knew P2 were true, then the conclusion would be true.

REASONING WITH A GENUINE DICHOTOMY

- | | |
|----------------|--|
| 1 (dichotomy) | Either A or B (where either A and B is true, but not both) |
| 2 (premise) | Not B (we've determined this in some way, e.g. science) |
| 3 (conclusion) | Therefore, A is true. |

Thus, when (1) is a genuine dichotomy and we are sure of **not-B** (i.e. **B** is false), then we can reason using the above form of argument and we will be guaranteed the truth of the conclusion.

However, individuals often try to *mimic* the above argument form by using a false dichotomy in place of a genuine dichotomy.

REASONING WITH A FALSE DICHOTOMY

- | | |
|----------------|---|
| 1 (dichotomy) | Either A or B (where A and B can both be false) |
| 2 (premise) | Not B |
| 3 (conclusion) | Therefore, A . |

When someone reasons using a false dichotomy, they have committed the **fallacy of the false dichotomy**. This type of reasoning is fallacious because even if **not-B** is true (i.e. **B** is false) in (2), *both A and B can be false* in (1), and so it does not follow that **A** must be true.

EXAMPLE #1 OF A FALSE DICHOTOMY

- | | |
|----|----------------------------------|
| P1 | Pigs can fly or donkeys can fly. |
| P2 | Donkeys cannot fly. |
| C | Therefore, pigs can fly! |

The above argument is *valid* (it is impossible for the premises to be true and conclusion false), but it is a fallacy to conclude that “pigs can fly” is *true*. Why? Since both of the alternatives *Pigs can fly* and *Donkeys can fly* are false (neither can fly), the denial of one of these alternatives *Donkeys cannot fly* does not entail that *Pigs can fly* is true.

Consider another example:

EXAMPLE #2 OF A FALSE DICHOTOMY

- | | |
|----|--|
| P1 | Either John is a brain-eating zombie or he is a friendly zombie. |
| P2 | John is <i>not</i> a brain-eating zombie. |
| C | Therefore, John is a friendly zombie. |

Again, the two alternatives in P1 are not jointly exhaustive and so it is possible for both alternatives to be false. Given that it may be the case that some third option is true, the proposition *John is not a brain-eating zombie* does not entail that *John is a friendly zombie*.

False dichotomies are sometimes used in advertising to force you to choose one product over another.

EXAMPLE #3 OF A FALSE DICHOTOMY: *Advertisement Using a False Dichotomy*

An older cowboy-looking sheriff walks into an office toward a guy in a buttoned-down blue collared shirt.

Sheriff Another cup of coffee? How long is this one going to last? Forty five minutes? An hour?
Worker Well...? (looking stupid)
Sheriff Listen, 5-hour ENERGY lasts a whole lot of hours. Take one in the afternoon and you'll feel alert and energized until the cows come home. And it's packed with B-vitamins and nutrients to make it last. So, what's it going to be partner?
Western sounds indicated a showdown
Worker *Worker throws away his cup of coffee.*

The advertisement contends that you only have two choices if you want to stay awake at your job:

You have to choose: **either** drink one coffee and get tired **or** drink 5-hour ENERGY

But, there other a number of other options:

get more sleep,
drink some water,
get more exercise,
drink five coffees.

Exercise Set #2:

A. Create your own fallacy of the false dichotomy. Be sure to explain how one of the premises is a false dichotomy by pointing out the alternative that makes the dichotomy false.

B. Consider the following arguments. State whether they commit the fallacy of the false dichotomy. If they do, explain why dichotomy is false by pointing out the relevant alternative that is not considered.

1.

P1 You either know that God exists (theist) or know that God doesn't exist (atheist).

P2 You don't know that God exists (not a theist)

C Therefore, you must be an atheist!

2.

P1 Assuming God exists, either God *loves* you and you will go to heaven or God *hates* you and you will go to hell.

P2 You are having a rough time in life, are a sinner, and so it is clear God doesn't love you.

C Therefore, God hates you and you will go to hell.

#3

P1 You are either a sinner or a saint.

P2 You are definitely not a saint. You have not given all of your money to charity and I don't see you working at the soup kitchen on the weekends.

C Therefore, you are a sinner.

#4

P1 When you die, you will go to heaven, hell, or purgatory.

P2 You are a horrible sinner and not going to heaven.

C Therefore, you are going to hell or purgatory.

5.

P1 You are either for the War or against the War.

P2 If you are for the War, then you respect the military.

P3 If you are against the War, then you don't respect the military.

P4 I saw you protesting the War yesterday and so you are definitely not for the War.

C Therefore, you are against the War and don't respect the military.

In considering #5, use the following table to consider the options considered and not considered:

	For the War	Against the War
Respect the Military		
Against the Military		

6. George Bush once said “Over time it’s going to be important for nations to know they will be held accountable for inactivity. You’re either with us or against us in the fight against terror.” What do you make of this? Is it a false dichotomy or are the options jointly exhaustive in that he makes everyone who doesn’t support the US, an enemy of the US?

3. Why is the Fallacy of the False Dichotomies so Persuasive?

There are at least three reasons to explain why the fallacy of the false dichotomy is so persuasive.

Reason #1: *False dichotomies mirror the reasoning with genuine dichotomies*

Structure of a Reasoning with a Genuine Dichotomy	
1 (dichotomy)	Either A or B (where either A and B is true, but not both)
2 (premise)	Not B
3 (conclusion)	Therefore, A is true.

Since genuine dichotomies are true, a convincing case for **not-B**, offers substantial support for the truth of **A**. In the fallacy of the false dichotomy, the dichotomy is presented *as if* it were jointly exhaustive of the options.

Reason #2: *False dichotomies typically involve one true premise (**not-B**), which is usually the principal focus of further discussion, and people tend to credit arguments with true premises.*

When someone commits the fallacy of the false dichotomy, they tend to provide extensive justification for the alternative they reject. Consider the following:

<i>Example #2 of a False Dichotomy</i>	
1 (dichotomy)	Either John is a brain-eating zombie or he is a friendly zombie.
2 (premise)	John is <i>not</i> a brain-eating zombie.
2a (defense)	Look, John is definitely not a brain-eating zombie. There are some brains right there for him to eat and he isn't even licking his lips!
3 (conclusion)	Therefore, John is a friendly zombie.

An extensive defense of (2) does two things: (i) since a key premise is rendered likely, the entire argument is (fallaciously) credited and (ii) defending (2) draws attention away from a required defense of (1).

Reason #3: *False dichotomies often rely upon the audience lacking an imagination or knowledge about the world.*

Suppose that you are an avid coffee drinker. When you don't drink coffee, you get very tired and cannot do your work. If this is the case, you might think that *you have to drink something to stay awake at your job*. You haven't really thought about whether anything else might give you more energy (e.g. more exercise, more sleep, eating healthy). You and so the 5-hour ENERGY dichotomy is likely to be very convincing.

<i>Example #3 of a False Dichotomy</i>	
1 (premise)	I have to drink something to stay awake at my job.
2 (dichotomy)	In order to stay awake on the job, you only have two choices: drink coffee or 5-hour Energy
3	Coffee will only keep you awake for 45minutes, while 5-Hour Energy lasts for many hours.
4 (conclusion)	You should drink 5-hour ENERGY.

4. Dilemmas vs. Dichotomy

A **dilemma** is a type of dichotomy involving two choices but neither choice is *practically acceptable*. One popular example of a dilemma is a **moral dilemma**, which is a conflict between competing moral requirements. For example, the choice between lying to a friend when the telling the truth would be harmful is a conflict between the principle: *you ought to tell the truth* and *you should not hurt people*. Another example is **Sophie's Choice**, which is any dilemma where an individual's choice to save one beloved person **A** will result in the death of another beloved person **B**. Or, the **Samaritan's Dilemma** refers to the choice between *giving to charity* and thereby either improving the welfare of an individual or increasing their need for charity or *not giving to charity* and thereby not improving the welfare of an individual but not increasing any need for charity. Dilemmas, like dichotomies, can be false or genuine.

5. False Dichotomies and the Straw Man

A common (doubly fallacious) argumentative tactic is to create a false dichotomy where one of the sides of the dichotomy is a straw man.

<i>Structure of a Reasoning with a False Dichotomy (where B is a straw man)</i>	
1 (dichotomy)	Either A or B (B is a straw man)
2 (premise)	Not B (obviously because it is a straw man)
3 (conclusion)	Therefore, A is true.

Exercise Set #3

A. Directions: In the following arguments, decide whether each is a genuine or false dichotomy. If it is a false dichotomy describe at least one relevant alternative that has been ignored.

1. You always get sprinkles on your ice cream. At the Creamery you can only get blue sprinkles or white sprinkles on your ice cream. They are out of white sprinkles. Therefore, you can only get blue sprinkles.
2. Either the Discovery Channel or the history channel is the best channel on TV. The history channel isn't the best channel on TV. Therefore, the Discovery Channel is the best channel on TV.
3. My mom will vote for either the Democratic or Republican presidential candidate. My mom has voted for Republican the past five years. Therefore, my mom will vote Republican this year.
4. Taxes will either be raised or lowered next year. Since they will not be raised, it follows that they will be lowered.
5. Your grandma noticed \$100 was missing from her purse. The \$100 was there this morning. She did not leave the house all day, and therefore a stranger couldn't have stolen it from her purse. Also, she couldn't have spent it and forgotten about it. Tyler, the neighbor boy, was the only person to come visit her that day. Therefore, Tyler stole the \$100.
6. After buying three consecutive used vehicles that have died completely in two years or less, I will NEVER buy used again. With my recent misfortune regarding my automobile purchases I guess it proves that you must either buy a new car, or suffer through a used junker.
7. Marijuana should clearly not be legalized for the sole reason of it having such strong addictive qualities. The plant is so insanely addictive that after only relatively few uses, you will surely become one of those lazy potheads. People need to understand, you either stay away from marijuana, or succumb to its addictive nature and become a craving addict.
8. Do you know why I love math so much? Because it's one of the few subjects that just comes naturally to me. And the best part about math is that there are only right or wrong answers. And I love being right, which makes math even better!
9. Statistics can be a difficult subject if you do not have the immediate knack for it along with the right kind of brain to understand how it works. It's one of those subjects where you either get it, or you don't.
10. When it comes to drug testing for a job or internship, the process is pretty cut-and-dry: you either pass or you fail. And trust me, you do not want to get that feeling after losing a job because you failed a drug test. Just don't do drugs; it makes your life much easier.
11. So you mean to tell me that you think the Boston Marathon bombings was an internal job performed by the U.S. government? You have got to be kidding me. You must be some sort of terrorist if you truly believe that garbage.
12. People need to learn that in this life, without risk there is no reward. There is no free lunch. You cannot get something out of nothing. One must put something on the line or they just will not gain what they want.
13. In football, there are only two kinds of people: winners or losers. Dare I ask, what are you?
14. "What do you mean you 'might' be pregnant??! You are either pregnant, or you're not, there is no in between!"

15. If I do not get an A on this final, my dad will kill me. He said if I don't start getting my grades up, I don't want to know what he'll do.
16. Eating French fries is bad for you. There have been many tests that prove the product contains saturated fats. If you eat French fries, you will become fat, and if you do not you will be skinny.
17. John was seen with a gun in his hand while standing over his wife who just died from gunshot. Either John shot his wife or John did not shoot his wife.
18. Mary loves making pottery. She goes to the pottery shop to buy new supplies every day after work. Either Mary is addicted to pottery or hates pottery.
19. Amy's shoes are missing. They were in her room this morning and when she got back from class they were missing. Since she locked the door while at class, the only possibility is that either her roommate stole the shoes or someone broke into her room and stole the shoes.
20. Erin studied a lot for her final exam. She took her exam and was unsure of how she did. Erin may have failed, got an average grade, or received an excellent grade.