

1. Analogies

To say that two things (or cases) are **analogous** is to say that they are comparable in some *relevant* respect. Many analogies are used to better explain a difficult, obscure, or abstract concept in terms of something that is easier to understand, less mysterious, and concrete.

To illustrate,

“Mama always said life was like a box of chocolates. You never know what you're gonna get.”

–Forest Gump

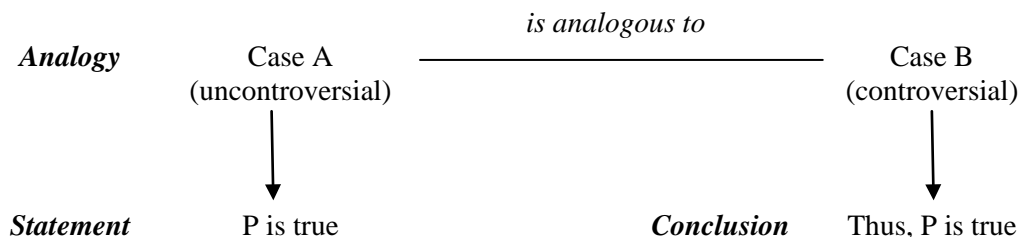
The idea is that *life* and *chocolate* are comparable in the respect that both involve making decisions in a state of uncertainty. For instance, consider a *box of chocolates* whose insides are filled with a variety of different flavors. Whenever you pick a chocolate, you are unsure whether it is filled with coconut, caramel, cherry, etc. You have to just take a bite and see what flavor it is. The uncertainty of picking chocolates is used to explain (make clearer) the uncertainty of *life*, e.g. when some choices you make seem one way on the surface but upon closer inspection turn out to be a different way. An analogy that simply uses one concept/thing to explain another is known as a **figurative analogy**. Their primary purpose is to create a conceptual linkage between two things that are similar in some respect, typically for the purpose of explaining a complicated concept in terms of a simpler concept.

Argumentative analogies are *arguments* that employ analogies as *premises*. Typically, arguments by analogies contain three parts:

1. The **analogy** (as a premise) which contends that two different cases (**A** and **B**) are analogous, i.e. they share some *relevant* feature *x*.
2. A **statement** that says from case **A**, some proposition **P** follows.
3. The **conclusion** that says since case **A** and case **B** are analogous, and **P** follows from **A**, then it also follows from **B**.

Here is the basic structure of an analogy:

<i>Structure of a Argument by Analogy</i>	
1 (analogy)	Case A is analogous to case B
2 (statement)	Concerning A , P is true.
3 (conclusion)	Therefore, concerning case B , P is true.



To put this somewhat differently:

<i>Structure of a Argument by Analogy</i>	
1 (analogy)	Case A is <i>relevantly like</i> case B
2 (statement)	Concerning A , you think that P is true.
3 (conclusion)	Therefore, concerning case B , you should also think that P is true.

To illustrate:

<i>A Simple Argument by Analogy</i>	
1 (analogy)	Water is analogous to wine.
2 (statement)	If you carelessly step on a floor with water on it, you will slip.
3 (conclusion)	If you carelessly step on a floor with wine on it, you will slip.

There are two major types of arguments by analogy: deductive arguments by analogy and inductive arguments by analogy.

2. Deductive Arguments by Analogy

A **deductive argument by analogy** is a deductively valid argument that contains an analogy as one of its premises. Earlier we said that an argument by analogy contains three components: (1) the *analogy* between two cases A and B, (2) a *statement P* follows in case A, and (3) the *conclusion* that **P** follows from case B. However, there are two key additions to this three part analysis.

First, we said that arguments by analogy contain an **analogy** (as a premise) which contends that two different cases (**A** and **B**) are analogous, i.e. they share some *relevant* feature *x*. Many arguments by analogy, however, do not specify what *specific relevant feature x* that **A** and **B** share. That is, they do not specify exactly how **A** and **B** are analogous. Thus, in order to analyze arguments by analogy, we add a fourth feature (1a), which is an **explanation of the analogy**.

<i>Structure of a Deductive Argument by Analogy</i>	
1 (analogy)	Case A is analogous to case B
1a (explained)	<i>Typically Unstated:</i> A and B share some specific relevant feature <i>x</i>
2 (statement)	Concerning A , P is true.
3 (conclusion)	Therefore, concerning case B , P is also true.

Second, in order for the argument by analogy to be *deductive valid*, we need a principle that makes it such that if the premises were true, the conclusion must be true. Without this principle, it would be possible for the premises to be true and conclusion false. For consider that it is possible for **A** and **B** to share a similar feature *x*, for **P** to be true in A, yet for **P** to be false in **B**.

<i>Structure of a Deductive Argument by Analogy</i>	
1 (analogy)	Dogs are analogous to cats
1a (explained)	Both share feature <i>x</i> , where <i>x</i> = furriness. That is, both are furry.
2 (statement)	Dogs bark.
3 (conclusion)	Therefore, cats bark.

The argument is clearly invalid since it is possible for (1), (1a), and (2) to be true and (3) false. Thus, what a deductive argument by analogy requires is a **principle that makes the argument valid** (2a). This is a principle asserts that **P** is true for *anything* that has some specific relevant feature *x*.

<i>Full Structure of a Deductive Argument by Analogy</i>	
1 (analogy)	Case A is analogous to case B
1a (explained)	<i>Typically Unstated:</i> A and B share some specific relevant feature <i>x</i> , where <i>x</i> = [insert property A and B share]
2 (statement)	Concerning A , P is true.
2a (principle)	For any case that has feature <i>x</i> , P is true.
3 (conclusion)	Therefore, concerning case B , P is also true.

To illustrate using the cat/dog example:

<i>Structure of a Deductive Argument by Analogy</i>	
1 (analogy)	Dogs are analogous to cats
1a (explained)	Both share feature <i>x</i> , where <i>x</i> = furriness. That is, both are furry.
2 (statement)	Dogs bark.
2a (principle)	Anything that is furry, barks.
3 (conclusion)	Therefore, cats bark.

To illustrate using the water/wine example:

<i>Full Example of a Deductive Argument by Analogy</i>	
1 (analogy)	Water is analogous to wine.
1a (explained)	Water and wine share the specific property of being liquids
2 (statement)	Concerning water, if you carelessly step on a floor with water on it, you will slip.
2a (principle)	For all liquids, if you carelessly step on a floor with a liquid on it, you will slip.
3 (conclusion)	Therefore, if you carelessly step on a floor with wine on it, you will slip.

The argument is now deductively valid for if the premises are true, then the conclusion must be true. None of this is to say that the premises or conclusion *are* (in fact) true, just that *if* they were true, then the conclusion also would be true.

Let's consider the example from pp.165-168 of Waller. Plugging a number of the statements into the above structure, we get the following:

<i>Example #2 of a Deductive Argument by Analogy, see pp.165-168</i>	
1 (analogy)	
1a (explained)	
2 (statement)	It is wrong for intelligent aliens to inflict pain on us by raising us for food.
2a (principle)	
3 (conclusion)	Therefore, it is wrong to inflict pain on animals just because we are more intelligent than they are.

The rest of the argument remains unstated and so it is necessary to make a few hypotheses about what is being assumed. First, begin with the analogy and its explanation:

<i>Example #2 of a Deductive Argument by Analogy, see pp.165-168</i>	
1 (analogy)	Humans eating animals (e.g. cows) is analogous to aliens eating humans.
1a (explained)	The case of humans eating animals and aliens eating humans share a relevantly similar feature <i>x</i> , where <i>x</i> = using greater intelligence to justify inflicting pain (and raising them for food) on another being.
2 (statement)	It is wrong for intelligent aliens to inflict pain on us by raising us for food.
2a (principle)	
3 (conclusion)	Therefore, it is wrong to inflict pain on animals just because we are more intelligent than they are.

Finally, we need to specify the *principle* that says every case where a more intelligent creature justifies inflicting pain (and raising them for food) on a less intelligent creature on the basis of having greater intelligence.

<i>Example #2 of a Deductive Argument by Analogy, see pp.165-168</i>	
1 (analogy)	Humans eating animals (e.g. cows) is analogous to aliens eating humans.
1a (explained)	The case of humans eating animals and aliens eating humans share a relevantly similar feature <i>x</i> , where <i>x</i> = using greater intelligence to justify inflicting pain (and raising them for food) on another being.
2 (statement)	It is wrong for intelligent aliens to inflict pain on us by raising us for food.
2a (principle)	Every case where a greater intelligence is used to justify inflicting pain on something is wrong..
3 (conclusion)	Therefore, it is wrong to inflict pain on animals just because we are more intelligent than they are.

The construction of the analogical argument is now complete. However, before turning to a discussion of how to *criticize* deductive arguments by analogy, it is helpful to see *why* arguments by analogy are so effective.

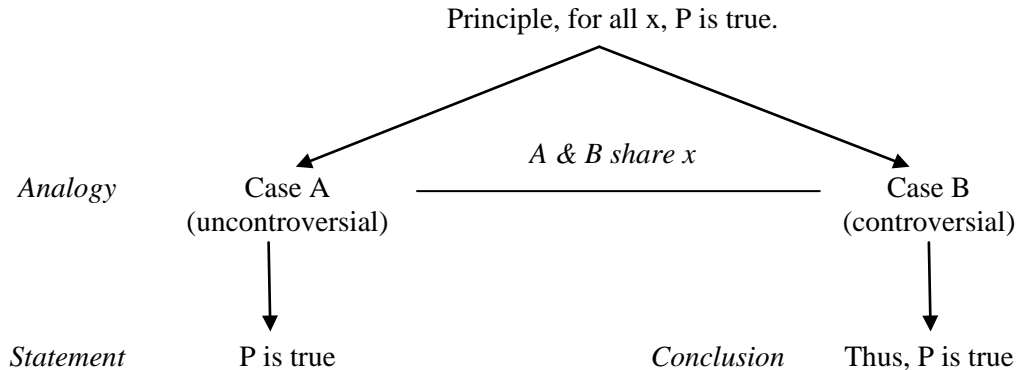
2.2. Why Use Arguments by Analogy?

Consider the structure of a deductive argument by analogy:

<i>Full Structure of a Deductive Argument by Analogy</i>	
1 (analogy)	Case A is analogous to case B
1a (explained)	<i>Typically Unstated:</i> A and B share some specific relevant feature <i>x</i>
2 (statement)	Concerning A , P is true.
2a (principle)	<i>Typically Unstated:</i> For any case that has feature <i>x</i> , P is true.
3 (conclusion)	Therefore, concerning case B , P is also true.

What an argument by analogy does is consider two different kinds of cases: an *uncontroversial case A* and a *controversial case B*. Next, it says that if you think about the uncontroversial case **A**, you find that you believe **P** (and you believe this on the basis of some principle). Finally, it says that if you the two cases are analogous, and you believe **P** in case **A** on the basis of some general principle, then you also ought to believe **P** about the controversial case **B**. Thus, what arguments by analogy do is *forge* a relationship between something controversial and

uncontroversial, then rely on what you already believe concerning uncontroversial matters (and *why* you believe it) in order to get you to believe something similar about a controversial matter.



In sum, it aims to start from a foundation of *common agreement* and extend agreement to a controversial issue.

Controversial Case: Humans eating animals

Uncontroversial Case: Aliens eating humans.

Uncontroversial Statement: It is wrong for aliens to inflict pain on us by raising us for food

Principle: Greater intelligence is *not* a justification for one being inflicting pain on another.

Controversial Statement (Conclusion): It is wrong to inflict pain on animals by raising them for food because we are more intelligent than they are.

Classroom Activity: In a small group, create your own analogical argument and write it on the board. Be sure to fully develop the argument using the structure provided.

2.2 Two Ways to Criticize Deductive Arguments by Analogy

There are three ways to criticize deductive arguments by analogy.

1. *Criticize the Analogy* (2a) by arguing that **A** is not analogous to **B**. That is, argue that **A** is not relevantly similar to **B**.
2. Criticize the *Statement* (2) and the *Principle* (2a) by saying that the statement is false and that the principle is false.
3. Accept the *Statement* (2) but reject the *Principle* (2a) by denying that **A** and **B** both imply the Principle (2a).

The **first way** to criticize deductive arguments by analogies is to reject the analogy upon which the argument is built.

1. Reject the *Analogy* (1a), i.e. reject that **A** and **B** share some specific relevant feature *x*. In the case of the water/wine example, this would amount to saying that water and wine are not liquids. In the case of the human/alien example, this would amount to saying that

both beings do *not* justify inflicting pain on another being on the basis of being more intelligent, e.g. you might say that human being justify inflicting pain on animals on the basis of the fact that humans have souls but animals don't, that humans are self-conscious but animals are not, etc.

The **second way** to criticize deductive arguments by analogies is to reject the *Statement* and thereby reject the *Principle* upon which the argument is built.

2. Reject the *Statement* (2a) and thereby reject the *Principle* (2), i.e. reject that concerning **A**, **P** is true. In the water/wine example, this would amount to arguing that concerning water, if you carelessly step on a floor with water on it, you will *not* slip. In the human/alien example, this would amount to arguing that it is *not* wrong for intelligent aliens to inflict pain on us by raising us for food. Rejecting the *Statement* tends to be very difficult because this part of the argument tends to be one of the least controversial parts.

The **third way** to criticize deductive arguments by analogies is to accept the *Statement* but deny that both cases **A** and **B** imply the *Principle*. In other words, argue that there is some consideration such that **P** is true in **A** but **P** is false in **B**.

3. Accept the *Statement* (2) but reject the *Principle* (2a), i.e. reject that for *any* case that has feature *x*, **P** is true.¹ In the water/wine example, this amounts to (i) accepting the claim that if you carelessly step on a floor with water on it, you will slip but (ii) rejecting this claim for *every* case involving liquids. In other words, you would need to argue that while water and wine are both liquids (1a), and water is slippery (2), there is some *further* consideration with respect to wine that makes the principle false (reject 2a). For example, you would have to argue that wine has a special property in it that makes it non-slippery if you were to step on it. In the human/alien example, you would need to argue that both humans and aliens justify the pain they inflict on less intelligent beings on the basis of being more intelligent (1a), it is wrong for smart aliens to eat humans (2), but there is some *further* consideration with respect to humans eating animals that makes it acceptable. For example, it is only acceptable to eat *really* unintelligent things.²

Accepting the *Statement* (2) but rejecting the *Principle* (2a) tends to be the most difficult criticisms to effectively cast against an analogical argument. One way to get at it is to ask yourself the following question:

Is there some additional consideration that explains why **P** is true in case **A** but **P** is false in case **B**? In other words, why might someone reasonable hold that **P** is true in case **A** but false in case **B**?

If you can think of one then you have a reason for accepting the *Statement* but rejecting the *Principle*.

¹ Otherwise put, case **A** and case **B** are not explained by the same principle.

² This would allow you to (i) accept the *Analogy* that humans and aliens justify eating other things on the basis of being *more intelligent*, (ii) accept the *Statement* that it is wrong for aliens to eat humans since humans are not *really* unintelligent.

Let's consider the following example:

<i>Full Structure of a Deductive Argument by Analogy</i>	
1 (analogy)	Alcohol prohibition is like marijuana prohibition
1a (explained)	During alcohol prohibition there was organized crime in Chicago (which was funded by an illegal substance) and there is organized crime now in Mexico (which is funded by an illegal substance).
2 (statement)	Legalization of alcohol eliminated organized crime in Chicago.
2a (principle)	For any situation where a substance is illegal and there is organized crime, legalization of the substance that funds that organized crime will eliminate that crime.
3 (conclusion)	Legalization of marijuana will eliminate organized crime in Mexico. ³

In the case of the above analogy, you might reject (1a) by arguing that there is not organized crime in Mexico funded by an illegal substance. In criticizing (2), you might reject that alcohol eliminated organized crime in Chicago. In the case of (2a), you could say that there is a reason for thinking that the legalization of alcohol eliminated crime in Chicago but it will not eliminate crime in Mexico, e.g. because the Mexican cartels have a much more economically diverse criminal organization.

Ex. pp.169: Ex.11-1 #1-3

<i>Full Structure of a Deductive Argument by Analogy</i>	
1 (analogy)	
1a (explained)	
2 (statement)	
2a (principle)	
3 (conclusion)	

Criticism #1: Reject the analogy (1a).

Criticism #2: Reject the statement (2).

Criticism #3: Reject the principle (2a).

<i>Full Structure of a Deductive Argument by Analogy</i>	
1 (analogy)	
1a (explained)	
2 (statement)	
2a (principle)	
3 (conclusion)	

Criticism #1: Reject the analogy (1a).

Criticism #2: Reject the statement (2).

Criticism #3: Reject the principle (2a).

<i>Full Structure of a Deductive Argument by Analogy</i>	
1 (analogy)	
1a (explained)	

³ For a specific example of this argument, see Stephen Colbert's interview of Ethan Nadelmann (Episode #05059).

2 (statement)	
2a (principle)	
3 (conclusion)	

Criticism #1: Reject the analogy (1a).

Criticism #2: Reject the statement (2).

Criticism #3: Reject the principle (2a).

3. Inductive Arguments by Analogy

An **inductive argument by analogy** is an inductive argument (an argument that goes beyond the information in the premises by making a projection on the basis of them) that contains an analogy as one of its premises. As such, it is an argument where it is possible for the premises to be true and the conclusion false.

<i>Full Structure of an Inductive Argument by Analogy</i>	
1 (analogy)	Case A is analogous to (relevantly similar to) case B
1a (explained)	Case A and Case B share the following similarities: <i>x</i> , <i>y</i> , and <i>z</i> .
2 (statement)	In case B , P is true.
2a (principle)	If A and B are similar in some respects, then it is <i>likely</i> that they will hold in other respects.
3 (conclusion)	Therefore, in case A , P will be (is likely to be) true.

For example,

<i>Full Structure of an Inductive Argument by Analogy</i>	
1 (analogy)	The Michael Phelps of 2012 is like the Michael Phelps of 2008.
1a (explained)	Michael Phelps of 2008 and 2012 both are excellent swimmers, in the Olympics, and have been training very hard.
2 (statement)	The Michael Phelps of 2008 won the gold medal in the 200m butterfly.
2a (principle)	If Michael Phelps of 2008 and 2012 are similar in being excellent swimmers, in being in the Olympics, and having trained very hard, then it is likely that they will hold in the further respect concerning winning gold in the 200m butterfly.
3 (conclusion)	Therefore, the Michael Phelps of 2012 will win gold in the 200m butterfly.

An inductive argument by analogy can range in strength from *very weak* to *very strong*. There are two key features that determine the *strength* of an argument:

1. The *amount* and *variety* of the features that A and B share.
2. The *relevance* of the features shared between **A** and **B** with respect to the conclusion

If **A** and **B** are similar in many relevant ways, then you are likely to have a *strong* argument. However, if **A** and **B** are similar in only a few ways or if the similarities are not really relevant to the conclusion, then you are likely to have a *weak argument*. For example, suppose that Michael Phelps of 2012 is very different than the Michael Phelps of 2008, e.g. he was paralyzed, hated swimming, wasn't training, etc., then the argument would be weaker. In addition, suppose that there was a great deal of overlap between Phelps of 2008 and Phelps of 2012 but they were

irrelevant to whether or not he would win the 200m butterfly, e.g. he has the same blood type, he is the same height, he still likes the same music.

pp.186: Ex.11-4 #1-5

pp.188: Ex.11-5 #1-2

4. Arguments by Analogy: Fallacies

Remember, to say that two things (or cases) are **analogous** is to say that they are comparable in some *relevant* respect. This is not to say that two things are identical but only that they are *relevantly similar* in some way.

4.1. The Faulty Analogy

The **fallacy of the faulty analogy** occurs when an argument involves a false analogy.

<i>An Argument by Analogy with a False Analogy</i>	
1 (analogy)	The U.S. government is just like a ruthless corporation
1a (explained)	A U.S. government and ruthless corporation both only care about making money.
2 (statement)	A ruthless corporation does not care about its employees and will cut expenses no matter what.
2a (principle)	Every entity that only cares about making money cares about nothing else and will do anything to make money.
3 (conclusion)	Therefore, the U.S. government does not care about its employees and will cut expenses no matter what.

The above argument commits the fallacy of the faulty analogy since the *analogy* upon which the argument depends is false. That is, U.S. government does not *only* care about making money.

4.2. The Fallacy of Analogical Literalism

One commits the **fallacy of analogical literalism** when one attacks the analogy on the basis that the items under comparison are not *exactly alike*, i.e. it points to some difference between the two cases **A** and **B** that is irrelevant to the comparison.

To illustrate, consider the following example:

<i>A Bad Deductive Argument by Analogy</i>	
1 (analogy)	Water is like wine.
1a (explained)	They both are liquids.
2 (statement)	Drinking a lot of water will not get you drunk.
2a (principle)	Drinking liquids will not get you drunk.
3 (conclusion)	Therefore, drinking a lot of wine will not get you drunk.

The argument above is clearly problematic but you would commit the fallacy of analogical literalism if you were to criticize the analogy by saying “water is *not* like wine because wine is colored and water is clear.” In such a case, you would be rejecting the analogy by arguing that water and wine are *not identical*.