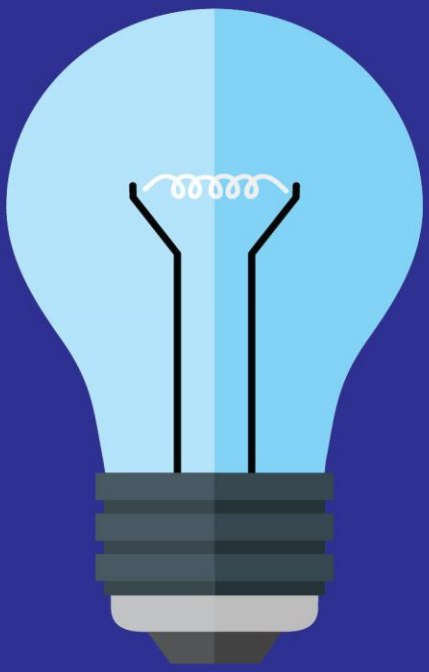

A GUIDE TO WESTERN LOGIC

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What is Logic?

Logic is the science or study of how to evaluate arguments and reasoning. It allows us to distinguish correct reasoning from poor reasoning. It's important because without correct reasoning, we don't have a viable means for knowing truth or arriving at sound beliefs.

It is also important because sometimes things sound reasonable, yet are illogical (i.e., most female arguments)

Aristotle, aka "The Father of Philosophy" (384 – 322 BC)

Though others before him discussed the nature of arguments and how to evaluate them, Aristotle was the first to create systematic criteria for doing so.

Aristotle developed the most famous logical sequence called *syllogism*.

> Premise 1: All men are mortal.
> Premise 2: Socrates is a man.
> Conclusion: Therefore, Socrates is mortal.

In this sequence, premise 2 is tested against premise 1 to reach the logical conclusion. Within this system, if both premises are considered valid, there is no other logical conclusion than determining that Socrates is a mortal.

Ethos, Logos, and Pathos

Ethos, Logos, Pathos are modes of persuasion used to convince audiences. They are also referred to as *the three artistic proofs* (a term coined by Aristotle) and are all represented by Greek words.

- Ethos
    - Ethical appeal: to convince an audience of the author's credibility or character (*ethos* is the Greek word for "character." The word "ethic" is derived from *ethos*.)
    - Ethos can be developed choosing language appropriate for the audience and topic (and choosing the right level of vocab for them), making yourself sound fair/unbiased, introducing expertise or your pedigree, and by using proper grammar/syntax.

- Pathos
    - Emotional appeal: to persuade an audience by appealing to their emotions, such as by trying to elicit their anger or sympathy.

(*pathos* is the Greek word for “suffering” and “experience.” The words “empathy” and “pathetic” are both derived from *pathos*.)
    - Pathos can be developed by using meaningful language, emotional tone, emotion evoking examples, stories of emotional events, and implied meanings.

- Logos
    - Logical Appeal: to convince an audience using logic or reason. To use logos would be to cite facts and statistics, historical and literal analogies, and certain authorities on a subject. (*logos* is the Greek word for “word.” The word “logic” is derived from *logos*.)
    - Logos can be developed by using advanced, theoretical, or abstract language, citing facts (very important), using historical and literal analogies, and by constructing logical arguments.

Inductive versus Deductive Logic

Deduction

- In the process of deduction, you begin with some statements called **premises** that are assumed to be true and then determine what else would have to be true if the premises are true.
- With deduction, you can provide absolute proof of your conclusions, given that your premises are correct.
- However, the premises themselves remain unproven and unprovable→ they must be accepted by faith or at face value.

Induction

- In the process of induction, you begin with some data, and then determine what general conclusion(s) can logically be derived from those data. In other words, you determine what theory or theories could explain the data. For example, you note that the probability of becoming schizophrenic is greatly increased if at least one of your parents is schizophrenic, and from that you conclude that schizophrenia may be inherited. That is certainly a reasonable hypothesis given the data.
- Note, however, that induction does not prove that the theory is correct. There are often alternative theories that are also supported by the data. For example, the behavior of the schizophrenic parent may cause the child to be schizophrenic, not the genes. *What is important in induction is that the theory does indeed offer a logical explanation of the data.* To conclude that the parents have no effect on the schizophrenia of the children is not supportable given the data, and would not be a logical conclusion.

What's the difference?

- Deduction and induction by themselves are inadequate for a scientific approach. While deduction gives absolute proof, there is no way to test the validity of the premises. And, while induction is driven by observation, it never approaches actual proof of a theory. The development of the scientific method involved a gradual synthesis of these two logical approaches.

Common Logical Fallacies

Ad hominem- When the arguer attacks his opponent rather than the argument (for example: He's so dumb; you should never believe anything he says).

Appeal to ignorance- Appealing to ignorance as evidence for something's existence or nonexistence (for example: No one has seen God, so he does not exist).

Argument from omniscience- When the arguer implies that he is omniscient, using generalizations like *all* or *everything* (for example: All French people drink wine).

Appeal to faith- Using faith rather than logic or evidence to support your argument (for example: Of course angels exist; you just need to have faith).

Appeal to tradition or bandwagon- Using tradition to support the validity of your argument (for example: Women have always been housewives, so they should stop trying to build careers).

Argument from authority- Arguing that because an alleged *expert* said something, it must be true (for example: Scientists at Harvard claim that chocolate is actually a health food, so let's go get some dessert).

Appeal to closure- The fallacy that an argument must be accepted in order for arguers to finally *reach closure* on the topic and settle it once and for all (for example: If we don't decide on something, we are going to keep at this all day).

Appeal to heaven[1]- Asserting that as God supports one's point of view, no further justification is necessary (for example: The Bible says that man has dominion over animals, so eating meat is okay).

Appeal to pity[2]- Urging the audience to side with the *underdog* regardless of the issue at hand (for example: We should feed all of the stray kittens because they are so cute and the outside world is so harsh).

Argument from consequences- Arguing that something simply cannot be true because if it were true, its consequences would be unacceptable (for example: Doctor, you must be wrong; my leg cannot be broken because if my leg were broken, I wouldn't be able to play soccer and I have a game tomorrow).

Argument from ignorance- Arguing that because we don't know whether a claim is true or false, it must be one or the other (for example: I cannot figure out why all of my photos were deleted; you must have been going through my camera).

Argument from inertia[3]- Believing that it is necessary to continue on a course of action even after finding out that one was mistaken because changing course would mean admitting that one's decision was wrong.

Argument from motives[4]- Attacking an arguer's motives for making a claim, rather than attacking the claim itself (for example: We cannot believe anything the Congressmen say; they just want to build their own personal wealth).

Argument from the Club[5]- Persuading by force, threats, or violence (for example: If you don't give me your lunch money, I will beat you up).

Argument from silence[6]- The fallacy that if someone says nothing about a subject, this in itself proves something about the truth of the matter (for example: If you don't tell me where you were last night, you must have been doing something wrong with your friends).

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[1] Aka Deus Vult; Gott mit uns; Manifest Destiny; the Special Covenant
[2] Aka Argumentum ad Miserecordiam
[3] Aka Stay the Course
[4] Aka Questioning Motives
[5] Aka Argumentum ad Baculaum
[6] Aka Argumentum ex Silentio

Bandwagon- Arguing that because *everyone* does or thinks something, it must be right (for example: Everyone knows that men are better than women).

Begging the question[7]- Arguing that something is true by repeating the same ideas in different words.

Big lie technique[8]- The fallacy of repeating a lie or half-truth over and over again until people believe it (aka what Hitler did)

Blind loyalty[9]- The fallacy that an argument is right solely because a respected source or leader, such as team, country, expert, or boss, says it's right (for example: I did shoot the Jews, but I was just following orders).

Blood is thicker than water[10]- When an argument is regarded as true because one knows/likes/is related to the individual involved (for example: My sister said she's observed that you are a lazy worker, and I always trust her opinions, so I have to fire you).

Complex question- Demanding a direct answer to a question that cannot be answered without first analyzing or challenging the basis of the question itself (for example: Just answer me, yes or no).

False dilemma[11]- A fallacy that offers only two possible alternatives even though there are more alternatives available (for example: You're either for us, or against us).

Noble effort- The fallacy that something must be true because someone has put so much effort and sacrifice into it (for example: But I've already been working on my PhD dissertation for three years; so, my thesis cannot be wrong).

Equivocation- Deliberately failing to define one's terms to keep things fuzzy.

Cause and effect- Assuming that the effect is related to a cause just because the events happen at the same time (for example: When the turtles are on shore, the tide goes down; therefore, the turtles leaving the ocean causes the tide to go down).

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[7] Aka Circular Reasoning
[8] Aka Staying on Message
[9] Aka Blind Obedience; the "Team Player" appeal; the Nuremberg Defense
[10] Aka For my friends, anything
[11] Aka Black/White Fallacy

Fallacy of composition- Assuming that what's true of the part is also true for the whole (for example: You love the color pink, so your family must also love it).

Fallacy of division- Assuming that what is true of the whole is also true for the parts (for example: The car is pink; therefore, its motor must also be pink).

Genetic fallacy- Attempting to support or reject a claim because of its origin or history (for example: You shouldn't buy Volkswagen cars because the Nazi regime developed them).

Guilt by association- Rejecting an argument because the person proposing it likes someone whom is disliked by another (for example: Your friend is in jail, so why should I trust you).

Poisoning the well- Presenting negative information about a person before they even speak in an attempt to discredit their argument (for example: She always thinks she is right; let's hear what she has to say).

Red herring- Introducing a topic not related to the one at hand in hopes of distracting your opponent (for example: I know I forgot to do the dishes but last week, I cleaned the house and did all the laundry; don't you appreciate anything).

Special pleading[12]- Applying standards to others that are different from the ones you apply to yourself (for example: I don't have to do any chores because I am older than you).

Straw man argument- Producing an argument about a weaker representation of the truth and attacking it (for example: Evolution can be true, because we know that humans did not evolve from monkeys).

Hasty generalization- Generalizing based on a sample that is too small (for example: All Americans are friendly; actually, you may have only met two Americans, and they both happened to be friendly).

[12] Aka Double Standard

Faulty cause and effect- Attributing the wrong cause to the effect (for example: She is quiet in class because she doesn't understand what the professor is saying; actually, she could just be tired).

Slippery slope- Exaggerating consequences (for example: She is late for class, which means she doesn't care about school, which means she will get a bad grade on her next exam; actually, maybe she does care about school and was late for an unrelated reason and maybe she will do well on her next exam).

Non sequitar- When the claim is not aligned with previous premises or evidence (for example: Since they are so rich, they must live in a fancy mansion; actually, they may just live in a regular house).

When Using Logic in Your Paper, Remember…

Your paper should always consist of a thesis, premises, and evidence, which together make your argument. This may seem straightforward, but often logic becomes fuzzy throughout the writing process, as it is easy to get lost in specifics and to forget to occasionally glance up at the big picture.

Some things you should never do in your paper:

- Never make assumptions. Every statement you make should be backed up with proof.
- Never be too general. Don't make large, sweeping claims on an issue. Rather, provide specific examples (with dates, citations, etc.) to support your arguments.
- It is easy for writers to dodge logical reasoning and take the easy road of appealing to reader's emotions. Do not try to invoke pity or compassion in your reader. Just use concrete facts and defend your arguments in order to make your case strong.

About The Author

Andrea received her Bachelor's in Literature from Cornell University and her Master in Education, focusing on Learning & Teaching, from Harvard University. She has taught English Literature and SAT prep at private and charter schools in both the US and in China.

For the past two years, she has worked as an education consultant, coaching over 250 students on their personal statement and supplementary essays, experiencing the rush of giving essays makeovers and helping students learn to love the English language.

Andrea is also the co-founder of writeofpassage.us, an online writing tutoring platform, collegenation.org, helping kids with their college application essays, and of essay-girls.com, a site devoted to test prep writing.

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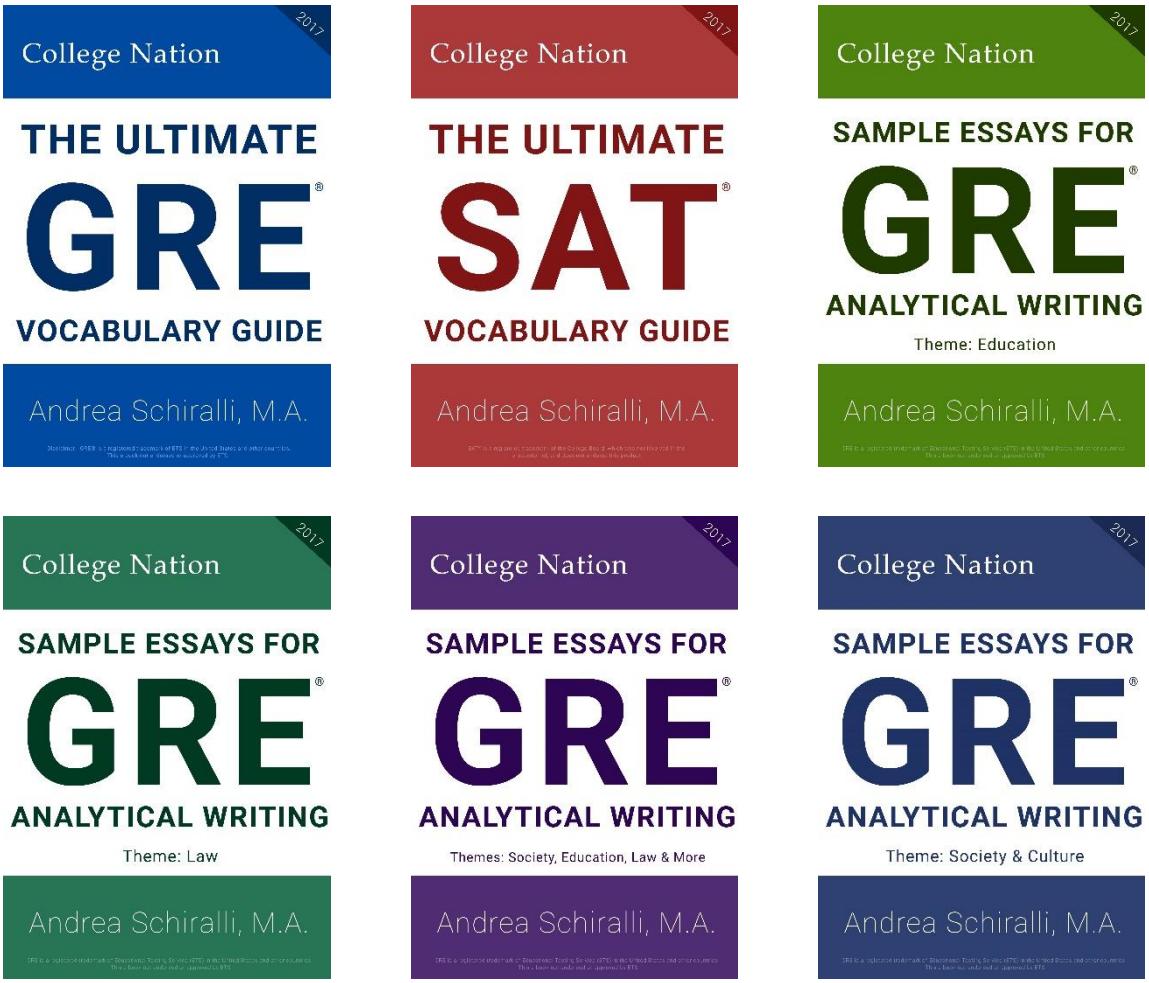

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