The Logical Structure of Argument

Terms to Know:

1. **claim** - statement to be justified/proven/upheld

2. **thesis/proposition/assertion** = positive statement or declaration to be supported with reasons and evidence

3. **premise** = a statement or assumption that is established before an argument is begun and is important to an understanding of logic and various errors or fallacies in reasoning

4. **grounds** = the reasons, support, and evidence presented to support your claim

5. **warrant** = a stated or unstated belief, rule, or principle that underlies an argument

6. **backing** = an even larger principle that serves as the foundation for a warrant

7. **major proposition** = the main point of an argument, which is supported by the minor propositions

8. **minor proposition** = the arguments you offer in support of the major proposition

9. **evidence** = the data included in the argument to support the minor propositions; must be relevant, accurate, and sufficient; based on facts, examples, and/or accepted opinions

10. **fact** = a verifiable statement

11. **opinion** = a judgment based on the facts and careful deductive or inductive reasoning

12. **induction** = process of reasoning by which you develop evidence in order to reach a useful conclusion

13. **deduction** = process of reasoning proceeding from general to specific in which you begin with a preliminary hypothesis and “test” that hypothesis with evidence to prove or disprove your initial conclusion

14. **conclusion** = the final analysis / opinion / decision derived logically from the major and minor propositions of an argument

15. **inference** = a logical conclusion derived by reasoning from previous evidence

16. **fallacy** = a line of incorrect reasoning drawn from premises

17. **refutation** = the acknowledgement and handling of opposing viewpoints. You must anticipate opposing viewpoints and counter (rebut) them effectively in order to convince or persuade your audience.

18. **qualifier** = words or phrases limiting the force of your claim
Overview – What do we mean by the “Logical Structure” of an Argument?

As you will recall from our many classroom discussions of the Rhetorical Triangle, “logos” refers to the strength of the message and author conveys to the audience – its internal consistency and credibility. Logos is the argument’s logical structure. But what do we mean by “logical structure?”

First of all, what we don’t mean by logical structure is the kind of precise certainty you get from a philosophy class in formal logic, the classes that deal with symbolic assertions that are universal and unchanging, such as “If all P’s are Q’s and if R is a P, then R is a Q.” This statement is logically certain so long as P, Q, and R remain pure abstractions. But in the real world, P, Q, and R turn into real things, and the relationships among them suddenly become fuzzy. For example, P might be a class of actions called “Sexual Harassment,” while Q could be the class of “Actions that Justify Dismissal from a Job.” If R is the class “Telling Off-Color Stories,” then the logic of our P-Q-R statement suggests that telling off-color stories (R) is an instance of sexual harassment (P), which in turn is an action justifying dismissal from a job (Q).

Now, most of us would agree that sexual harassment is a serious offense that might well justify dismissal from a job. In turn, we might agree that telling off-color stories, if the jokes are sufficiently raunchy and are inflicted upon an unwilling participant, constitutes sexual harassment. But few of us would want to say categorically that ALL people who tell off-color stories are harassing their listeners and ought to be fired. Most of us would want to know the particulars of the case before making a final judgment.

In the real world, then, it is difficult to say that P’s are always Q’s or that every instance of Q results in an R. That is why we discourage students from using words like “prove” in claims they write for arguments [as in, “This paper will prove that capital punishment is wrong.”]. Real-world arguments seldom prove anything. They can only make a good case for something, a case that is more or less strong, more or less probable. Often the best you can hope for is to strengthen the resolve of those who agree with you or weaken the resistance of those who oppose you. If your audience believes X and you are arguing for Y, you cannot expect your audience suddenly, as the result of your argument, to start believing Y. If your argument causes an audience to experience a flicker of doubt or an instant of open-mindedness, you’ve done well. Proofs and dramatic shifts in position are not what real-world arguments are all about.

A key difference between formal and real-world argument is that real-world arguments are not grounded in abstract, universal statements. Rather, as we shall see, they must be grounded in beliefs, assumptions, or values shared or allowed by the audience. A second important difference is that in real-world arguments these beliefs, assumptions, or values are often unstated [implied]. So long as writer and audience share the same assumptions, then it’s find to leave them unstated. But if these underlying assumptions aren’t shared, the writer has a problem.

To illustrate the nature of this problem, consider the following argument:

After-school jobs are bad for teenagers because they take away study time.

On the face of it, this is a plausible argument. But the argument works only if we agree with the writer’s assumption that loss of study time is bad. Suppose that we were skeptical of this assumption and believed that time spent on a job might be more valuable in the long run than time spent studying. Suppose we believed that a high school job teaches kids good work habits, gives them marketable skills, creates contacts and sources for future job references, and so forth. Thus we might believe that developing a good work reputation might lead to greater career success than getting higher grades through more studying. To succeed with the “loss of study time” reason, the writer would then have to create an explicit argument for the value of study time instead of leaving this crucial part of the argument unstated and undeveloped.
The Greek philosopher Aristotle would have called the preceding core argument [“After-school jobs are bad for teenagers because they take away study time.”] an enthymeme. An enthymeme is an incomplete logical structure that depends, for its completeness, upon one or more unstated assumptions (values, beliefs, principles) that serve as the starting point of the argument. The successful arguer, said Aristotle, is the person who knows how to formulate and develop enthymemes so that the argument hooks into the audience’s values and beliefs.

To clarify the concept of “enthymeme,” let’s go over this same territory again more slowly, examining what we mean by “incomplete logical structure.” The sentence “After-school jobs are bad for teenagers because they take away study time” is an enthymeme. It combines a claim [“After-school jobs are bad for teenagers”] with a reason expressed as a because clause [“because they take away study time”]. To render this enthymeme logically complete, one must supply an unstated assumption – “loss of study time is bad for teenagers.” If your audience accepts this assumption, then you must supply another argument to support it, and so on until you find common ground with your audience.

To sum up:

1. Claims are supported with reasons. You can usually state a reason as a because clause attached to a claim.
2. A because clause attached to a claim is an incomplete logical structure called an enthymeme. To create a complete logical structure from an enthymeme, the unstated assumption or assumptions must be articulated.
3. To serve as an effective starting point for the argument, this unstated assumption should be a belief, value, or principle that the audience grants or allows.

Let’s illustrate this structure by putting the previous example – plus two new ones – into schematic form.

**INITIAL ENTHYMENE:** After-school jobs are bad for teenagers because they take away study time.

**CLAIM:** After-school jobs are bad for teenagers.

**STATED REASON:** because they take away study time

**UNSTATED ASSUMPTION:** Loss of study time is bad.

**INITIAL ENTHYMENE:** After-school jobs are good for teenagers because they teach responsibility and time management.

**CLAIM:** After-school jobs are good for teenagers.

**STATED REASON:** because they teach responsibility and time management

**UNSTATED ASSUMPTION:** Learning responsibility and time management is good.
INITIAL ENTHYMEME: Cocaine and heroin should be legalized because legalization would eliminate the black market for drugs.

CLAIM: Cocaine and heroin should be legalized.

STATED REASON: because legalization would eliminate the black market for drugs.

UNSTATED ASSUMPTION: An action that eliminates the black market for drugs is good. [Or, to state the assumption more fully, the benefits of eliminating the black market in drugs far outweighs the negative effects of legalizing drugs.]

There is an easy way to check to be sure that your stated enthymeme is logical in structure. By following a simply "equation", you can be certain that your argument is valid:

\[
\begin{align*}
A &= B \\
B &= C \\
\text{Therefore},
A &= C
\end{align*}
\]

Simply break down your "enthymeme" into its A, B, and C "terms":

\[
\begin{align*}
A &= \text{After-school jobs [subject of claim]} \\
B &= \text{Activities that teach responsibility and time management [reason]} \\
C &= \text{Activities that are good for teens [body of claim]}
\end{align*}
\]

\[
\begin{align*}
A &= \text{Cocaine/heroin [subject of claim]} \\
B &= \text{Drugs that, when legalized, would eliminate the black market for drugs [reason]} \\
C &= \text{Drugs that should be legalized [body of claim]}
\end{align*}
\]

*You can ONLY get from "A" to "C" by way of "B"! Show logical progression of thought!*
Let's practice!

Working in small groups and modeling your work on the examples above, identify the claim, stated reason, and unstated assumption that completes each of the following enthymemic arguments. Be sure to identify your A, B, and C terms!

1. Joe is a bad leader because he is too bossy.

2. Drugs should not be legalized because legalization would greatly increase the number of drug addicts.

3. Welfare benefits for unwed mothers should be eliminated because doing so will greatly reduce the nation’s illegitimacy rate.

4. We should strengthen the Endangered Species Act because doing so will preserve genetic diversity on the planet.

5. Abortion should be legal because a woman has the right to control her own body. [This enthymeme has several unstated assumptions; see if you can recreate all of the possible missing premises.]

Now, take your OWN research-based argument topic. Write the initial enthymeme, including your broad claim and one stated reason you plan to develop in your argument. Identify the underlying assumption that would complete your enthymemic argument. Do this for all three main points of support for your argument.
Expanding the Enthymemes – The Toulmin System for Describing / Defending Arguments

In the 1950’s, philosopher Stephen Toulmin rejected the prevailing models of argument based on formal logic in favor of a very audience-based courtroom model. Toulmin’s model differs from formal logic in that it assumes (1) that all assertions and assumptions are contestable by “opposing counsel,” and (2) that all final “verdicts” about the persuasiveness of the opposing arguments will be rendered by a neutral third party, a judge or jury. Keeping in mind the “opposing counsel” forces us to anticipate counterarguments and to question our assumptions; keeping in mind that the judge and jury reminds us to answer opposing arguments fully, without rancor, and to present positive reasons for supporting our case as well as negative reasons for disbelieving the opposing case. Above all else, Toulmin’s model reminds us not to construct an argument that appeals only to those who already agree with us.

The system we will use for analyzing arguments combines Toulmin’s system with Aristotle’s concept of the enthymeme. The purpose of this system is to provide writers with an economical language for articulating the structure of argument and, in the process, to help them anticipate their audience’s needs. More particularly, it helps writers see enthymemes – in the form of a claim with because clauses – as the core of their argument, and the other structural elements from Toulmin as strategies for elaborating and supporting that core.

This system builds on the one you have been practicing above. We simply need to add a few more key terms from Toulmin. The first key term is Toulmin’s “warrant,” the name we will now use for the unstated assumption that turns an enthymeme into a complete logical structure. For example:

**INITIAL ENTHYMEME:** After-school jobs are bad for teenagers because they take away study time.

CLAIM [A=C]: After-school jobs are bad for teenagers.

STATED REASON [B]: because they take away study time

WARRANT: [B=C] Loss of study time is bad.

**INITIAL ENTHYMEME:** Cocaine and heroin should be legalized because legalization would eliminate the black market for drugs.

CLAIM [A=C]: Cocaine and heroin should be legalized.

STATED REASON [B]: because legalization would eliminate the black market for drugs.

WARRANT [B=C]: An action that eliminates the black market for drugs is good. [Or, to state the assumption more fully, the benefits of eliminating the black market in drugs far outweighs the negative effects of legalizing drugs.]
Toulmin derives the word “warrant” from the concept of “warranty” or “guarantee.” The warrant is the value, belief, or principle that the audience has to hold if the soundness of the argument is to be guaranteed or warranted. We sometimes make similar use of this word in ordinary language when we say “That is an unwarranted conclusion,” meaning one has leapt from information about a situation to a conclusion without any sort of general principle to justify or “warrant” that move. Thus, if we claim that cocaine and heroin ought to be legalized because legalization would end the black market, we must be able to cite a general principle or belief that links our prediction that legalization ought to occur. In this case the warrant is the statement, “An action that eliminates the black market for drugs is good.” It is this underlying belief that warrants or guarantees the argument. Just as automobile manufacturers must provide warranties for their cars if they want skeptical customers to buy them, we must provide warrants linking our reasons to our claims if we expect skeptical audiences to “buy” our arguments.

But arguments need more than claims, reasons, and warrants. These are simply one-sentence statements – the frame of an argument, not a developed argument. To flesh out our arguments and make them convincing, we need what Toulmin calls “grounds” and “backing.” Grounds are the supporting evidence – facts, data, statistics, testimony, or examples – that cause you to make a claim in the first place or that you produce to justify a claim in response to audience skepticism. Toulmin suggests that grounds are “what you have to go on” in an argument. In short, they are collectively all the evidence you use to support a reason. It sometimes helps to think of grounds as the answer to a “How do you know?” question preceding a reason. [How do you know that after school jobs take away study time? How do you know that legalizing drugs will end the black market?] Here is how grounds fit into our emerging argument schema:

<table>
<thead>
<tr>
<th>CLAIM  [A=C]:</th>
<th>After-school jobs are bad for teenagers</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATED REASON [B]:</td>
<td>because they take away study time</td>
</tr>
<tr>
<td>GROUNDS  [A=B]:</td>
<td>data and evidence showing that after-school jobs take away study time [examples of teenagers who work late and don’t study, statistics showing that teenagers with jobs study less than those without jobs, testimony from teachers that working teens study less than those without jobs, etc.]</td>
</tr>
<tr>
<td>WARRANT  [B=C]:</td>
<td>Loss of study time is bad</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CLAIM  [A=C]:</th>
<th>Cocaine and heroin should be legalized.</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATED REASON [B]:</td>
<td>because legalization would eliminate the black market for drugs.</td>
</tr>
<tr>
<td>GROUNDS  [A=B]:</td>
<td>data and evidence showing how legalizing cocaine and heroin would eliminate the black market [statistics, data, and examples describing the size and effect of current black market, followed by arguments showing how selling cocaine / heroin legally in state-controlled stores would lower the price and eliminate the need to buy them from drug dealers]</td>
</tr>
<tr>
<td>WARRANT  [B=C]:</td>
<td>An action that eliminates the black market for drugs is good.</td>
</tr>
</tbody>
</table>
In many cases, successful arguments require just these three components: a claim, a reason, and grounds. If the audience already accepts the warrant [unstated assumptions behind the reason], then the warrant can safely remain in the background unstated and unexamined. But if there is a change that the audience will question or doubt the warrant, then the writer needs to back it up by providing an argument in its support. “Backing” is the argument that supports the warrant. **Backing** answers the question, “How do you know” or “Why do you believe that?” - both of which are tied to the warrant. [Why do you believe that loss of study time is bad? Why do you believe that the benefits of ending the black market outweigh the costs of legalizing cocaine and heroin?] Here is how backing is added to our schema:

**WARRANT:**

Loss of study time is bad

**BACKING [B=C]**

argument showing why loss of study time is bad
[it leads to poor grades, to inadequate preparation for college, to less enjoyment of school, to lower self-image as a student, etc.]

**WARRANT:**

An action that eliminates the black market in drugs is good.

**BACKING [B=C]:**

an argument supporting the warrant by showing why eliminating the black market for drugs is good [statistics and examples about the ill effects of the black market, data on crime and profiteering, evidence that huge profits make drug dealing more attractive than ordinary jobs, the high cost of crime created by the black market, the cost to taxpayers of waging the war against drugs, the high cost of prisons to house incarcerated drug dealers, etc.]

Finally, Toulmin's system asks us to imagine how a shrewd adversary would try to refute our argument. Specifically, the adversary might attack our reason and grounds by showing how an after-school job does not lead to loss of study time or how legalizing drugs would not end the black market for drugs. Or the adversary might attack our warrant and backing by showing how loss of study time may not be bad or how the negative consequences of legalizing drugs might outweigh the benefits of ending the black market.

In the case of the after-school job debate, an adversary might offer one of both of the following refutations:

**REFUTATION:**

Refuting the reason and grounds: evidence of teenagers who combine work with good study habits; argument showing that having a job can teach time management, which leads in turn to an increase in studying.

Refuting the warrant and backing: argument showing that advantages of holding a job may outweigh disadvantages of reduced study time; argument showing that job experience and achieving a track record as a good worker may be more highly valued by employers than GPA.
If either of these rebuttals seems valid, the author of an argument critical of after-school jobs must build a response into her argument. To help writers imagine such responses, refutations are often stated as conditionals using the word *unless*, such as "After school jobs take away study time unless it turns out that holding a job may teach teenagers to use time more efficiently and to study more effectively." Refutations name the exceptions to the rule, the circumstances under which your reason or warrant might not hold. Stated in this manner, the refutation for the legalization of drugs might look like this:

**REFUTATION:**

Refuting the reason and grounds: ending the black market is good unless taxes on legal drugs would keep the price high enough that a black market would still exist; unless new kinds of illegal designer drugs would be developed and sold on the black market.

Refuting the warrant and backing: ending the black market is good unless the increased numbers of drug users and addicts were unacceptably high; unless harmful changes in social structure due to acceptance of drugs were too severe; unless the health and economic consequences of increased number of drug users were catastrophic; unless social costs to families and communities associated with addiction or erratic behavior during drug-induced "highs" were too great.

Toulmin's final term, used to limit the force of a claim and indicate the degree of its probable truth, is "qualifier." The qualifier reminds us that real-world arguments almost never prove a claim. We may say things like "very likely," "probably," or "maybe" to indicate the strength of the claim we are willing to draw from our grounds and warrant. Thus if there are exceptions to your warrant or if your grounds are not very strong, you will have to qualify your claim. For example, you might say "Holding an after-school job is a bad idea for many teenagers" or "With full awareness of the potential dangers, I suggest we consider the option of legalizing drugs as a way of ending the ill effects of the black market." Placed in our schema, the qualifier might be stated this way:

**CLAIM:** After-school jobs are bad for teenagers

**QUALIFIER:** in many cases; for many teens

**STATED REASON:** because they take away study time

**CLAIM:** Cocaine and heroin should be legalized.

**QUALIFIER:** perhaps, tentatively

**STATED REASON:** because legalization would eliminate the black market for drugs.
Although the system just described might at first seem complicated, it is actually fairly easy to use after you've had some opportunity to practice. The following chart will help you review the terms and their purposes/functions:

**ORIGINAL ENTHYMEME:** Your claim with because clause

**CLAIM:** the point or position you are trying to get your audience to accept

**STATED REASON:** your because clause; your reasons are the subordinate claims you make in support of your main claim

**GROUNDS:** the evidence (data, facts, testimony, statistics, examples, etc.) supporting your stated reason

**[A=B]**

**WARRANT:** the originally unstated assumption behind your enthymeme, the statement of belief, value, principle, etc. that, when accepted by an audience, warrants or underwrites your argument

**BACKING:** evidence or other argumentation supporting the warrant. (If the audience already accepts the warrant, then backing is usually not needed. But if the audience doubts the warrant, backing is essential.)

**[B=C]**

**QUALIFIER:** words or phrases limiting the force of your claim

**REFUTATION:** your acknowledgement of the limits of your claim - those conditions under which it does not hold true, in anticipation of an adversary's counterargument, against your reason and grounds or against your warrant and backing

To help you practice using these terms, here are two more examples:

**ORIGINAL ENTHYMEME:** Appalachian State will win the football championship because they have the best running backs in the league.

**CLAIM:** Appalachian State will win the football championship this year

**QUALIFIER:** probably

**STATED REASON:** because they have the best running backs in the league

**GROUNDS:** physical description of the excellence of the running backs, statistics on their accomplishments, comparative data showing that no other team in the league has running backs of this quality

**WARRANT:** The team with the best running backs will win the football championship

**BACKING:** argument showing the value of running backs to a winning team; statistics linking strong running backs to wins in this league

**REFUTATION:**

- **Refutation of reason/grounds:** unless Appalachian State doesn't have the best running backs in the league (evidence that the running backs are not as strong as those of several other teams; data showing weaknesses in the running backs - propensity

- **Refutation of warrant / backing:** unless other teams alter their defenses to protect against the run, unless passing teams win more than running teams, unless Appalachian State has serious weaknesses in defense, etc
The exclusionary rule is a bad law because it allows drug dealers to escape prosecution.

CLAIM: The exclusionary rule is a bad law

STATED REASON: because it allows drugs dealers to escape prosecution

GROUNDs: numerous cases wherein exclusionary rule prevented police from presenting evidence in court; examples of nitpicking rules and regulations that allowed drug dealers to go free; testimony from prosecutors and police about how the exclusionary rule hampers their effectiveness on the job

WARRANT: It is beneficial to our country to try to prosecute drug dealers.

BACKING: arguments showing the extent and danger of the drug problem; arguments showing that prosecuting and imprisoning drug dealers will reduce the drug problem

QUALIFIER: perhaps, tentatively

REFUTATION: Refutation of reason/grounds: unless the exclusionary rule does not allow many drug dealers to escape prosecution (counterevidence showing the numerous times when police and prosecutors followed the exclusionary rule and still obtained convictions; statistical analysis showing that the percentage of cases in which exclusionary rule threw evidence out of court is very low.)

Refutation of warrant / backing: unless reversing exclusionary rule would have serious costs that outweigh benefits; unless greatly increasing the pursuit and prosecution of drug dealers would have serious costs (arguments showing that the value of protecting individual liberties outweighs the value of prosecuting drug dealers; some statistical evidence showing that the expense of building more prisons and incarcerating drug dealers is prohibitive; arguments showing that the high social cost of diverting police attention from other crimes in order to track drug dealers.)
Working in small groups and modeling your work on the examples above, use the Toulmin schema to help you determine what you need to consider when developing each enthymeme. Identify the A, B, and C relationships. Include the CLAIM, STATED REASONS, GROUNDS, WARRANT, BACKING, QUALIFIER, AND REFUTATION (of reason / grounds, or warrant / backing):

1. Joe is a bad leader because he is too bossy.

2. Drugs should not be legalized because legalization would greatly increase the number of drug addicts.

3. Welfare benefits for unwed mothers should be eliminated because doing so will greatly reduce the nation’s illegitimacy rate.

4. We should strengthen the Endangered Species Act because doing so will preserve genetic diversity on the planet.

5. Abortion should be legal because a woman has the right to control her own body. [This enthymeme has several unstated assumptions; see if you can recreate all of the possible missing premises.]

Now, take your OWN research-based argument topic. Write each initial enthymeme, including your broad claim and three stated reasons you plan to develop in your argument. Determine what you need to consider when developing each enthymeme. Include the CLAIM, STATED REASONS, GROUNDS, WARRANT, BACKING, QUALIFIER, AND REFUTATION (of reason / grounds, or warrant / backing):