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Logic for Law Students: How to Think Like a Lawyer

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LOGIC FOR LAW STUDENTS

How to Think Like a Lawyer

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Abstract

Law schools no longer teach logic. In the authors' view this is tragic, given that the fundamental principles of logic continue to undergird the law and guide the thinking of judges. In an effort to reverse the trend, this essay explains the core principles of logic and how they apply in the law school classroom. The manuscript begins by examining the basics of the deductive syllogisms and then turns to inductive generalizations and the uses and abuses of analogies. The authors claim that students who master the basics of logic laid out in this article will be better lawyers and will feel more comfortable when they find themselves presenting arguments to judges and juries.

INTRODUCTION

Logic is the lifeblood of American law.[1] In case after case, prosecutors, defense counsel, civil attorneys and judges call upon the rules of logic to structure their arguments. Law professors, for their part, demand that students

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1. Apologies here to Oliver Wendell Holmes. As Holmes put it, "[t]he life of the law has not been logic, it has been experience." Oliver Wendell Holmes, Jr., Common Law 1 (1881). *But see* John H. Watson, M.D., *A Case of Deduction, Or, Upon the First Meeting of Sherlock Holmes and Oliver Wendell Holmes, Jr.*, 24 U. ARK. LITTLE ROCK L. REV. 855, n.1 (2002) (arguing that the "overarching themes of Justice Holmes's writings" are comparable to the methods of deduction employed by Sherlock Holmes).

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defend their comments with coherent, identifiable logic. By now we are all familiar with the great line spoken by Professor Kingsfield in *The Paper Chase*: "You come in here with a head full of mush and you leave thinking like a lawyer." What is thinking like a lawyer? It means employing logic to construct arguments.

Notwithstanding the emphasis on logical reasoning in the legal profession, our law schools do not give students an orientation in the principles of logic. Professor Jack L. Landau complained that, "the idea of teaching traditional logic to law students does not seem to be very popular."[2] Indeed, Professor Landau found that "[n]ot one current casebook on legal method, legal process, or the like contains a chapter on logic."[3] In our view, this is tragic. The failure to ground legal education in principles of logic does violence to the essence of the law. Leaving students to distill the principles of logic on their own is like asking them to design a rocket without teaching them the rules of physics. Frustration reigns, and the resulting argument seems more mush-like than lawyerly. In these pages we make a small attempt to right the ship by offering a primer on the fundamentals of logical thinking.

Our goals are modest. At the risk of disappointing philosophers and mathematicians, we will not probe the depths of formal logic.[4] Neither will we undertake to develop an abstract theory of legal thinking. This Article, rather, attempts something new: We endeavor to explain, in broad strokes, the core principles of logic and how they apply in the law school classroom. Our modest claim is that a person familiar with the basics of logical thinking is more likely to argue effectively than one who is not.[5] We believe that students who master the logical tenets laid out in the following pages will be better lawyers, and will feel more comfortable when they find themselves caught in the spotlight of a law professor on a Socratic binge.

Sifting through the dense jargon of logicians, we have identified a handful of ideas that are particularly relevant to the world of legal thinking. First, all prospective lawyers should make themselves intimately familiar with the fundamentals of deductive reasoning. Deductive reasoning, as Aristotle taught long ago, is based on the act of proving a conclusion by means of two other propositions. Perhaps 90 percent of legal issues can be resolved by deduction,

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2. Jack L. Landau, *Logic for Lawyers*, 13 PAC. L.J. 59, 60 (1981) citing BRAND & J. WHITE, LEGAL WRITING: THE STRATEGY OF PERSUASION (1976).

3. *Id.*

4. A more comprehensive discussion, geared toward practicing lawyers, may be found in Judge Aldisert's Book LOGIC FOR LAWYERS: A GUIDE TO CLEAR LEGAL THINKING (1997).

5. We note that logical reasoning is particularly important at the appellate level where most cases are decided on the merits of the briefs. *See, e.g.*, Mary Massaron Ross, *A Basis for Legal Reasoning: Logic on Appeal*, J. ASS'N LEGAL WRITING DIRECTORS 179, 182 (2006).

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so the importance of understanding this type of reasoning cannot be overstated. Second, students should acquaint themselves with the principles of inductive generalization. Inductive generalizations, used correctly, can help students resuscitate causes that seem hopeless. Third, reasoning by analogy—another form of inductive reasoning—is a powerful tool in a lawyer's arsenal. Analogies help lawyers and judges solve legal problems not controlled by precedent and help law students deflect the nasty hypotheticals that are the darlings of professors. Finally, we comment briefly on the limitations of logic.

I. IT'S ELEMENTARY: DEDUCTIVE REASONING & THE LAW

A. The Syllogism

Logic anchors the law. The law's insistence on sound, explicit reasoning keeps lawyers and judges from making arguments based on untethered, unprincipled, and undisciplined hunches.[6] Traditionally, logicians separate the wider universe of logical reasoning into two general categories: inductive and deductive. As we will see, both branches of logic play important roles in our legal system. We begin with deductive reasoning because it is the driving force behind most judicial opinions. Defined broadly, deduction is reasoning in which a conclusion is *compelled* by known facts.[7] For example, if we know that Earth is bigger than Mars, and that Jupiter is bigger than Earth, then we also know that Jupiter *must* be bigger than Mars. Or, imagine that you know your dog becomes deathly ill every time he eats chocolate. Using deduction we know that if Spike wolfs down a Snickers bar, a trip to the vet will be necessary. From these examples, we can get an idea of the basic structure of deductive arguments: If A and B are true, then C also must be true.

The specific form of deductive reasoning that you will find lurking below the surface of most judicial opinions and briefs is the syllogism—a label logicians attach to any argument in which a conclusion is inferred from two premises. For example:

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6. *See* JOHN DEWEY, HOW WE THINK 17 (1933). Dewey says that reasoned thought "converts action that is merely appetitive, blind and impulsive into intelligent action. *Id.* S. Morris Engel puts it this way: "The study of logic . . . helps us free ourselves from ignorant thoughts and actions." S. MORRIS ENGEL, WITH GOOD REASON: AN INTRODUCTION TO INFORMAL FALLACIES 42 (1994).

7. *See* EDWARD P.J. CORBETT & ROBERT J. CONNORS, CLASSICAL RHETORIC FOR THE MODERN STUDENT 32 (1999) (describing deductive reasoning as "an act of the mind in which, from the relation of two propositions to each other, we infer, i.e., understand and affirm, a third proposition").

All men are mortal.
Socrates is a man.
Therefore, Socrates is mortal.

According to the traditional jargon, the syllogism's three parts are called the major premise, the minor premise, and the conclusion. The major premise states a broad and generally applicable truth. In this example, "All men are mortal." The minor premise states a specific and usually more narrowly applicable fact: "Socrates is a man." The conclusion then draws upon these premises and offers a new insight that is known to be true based on the premises: "Socrates is a mortal."

Gottfried Leibniz expressed the significance of the syllogism three hundred years ago, calling its invention "one of the most beautiful, and also one of the most important, made by the human mind."[8] For all its power, the basic principle of the syllogism is surprisingly straightforward: What is true of the universal is true of the particular.[9] If we know that *all* cars have wheels and that a Toyota is a car, then a Toyota must have wheels. The axiom may be stated this way: If we know every member of a class has a certain characteristic, and that certain individuals are members of that class, then those individuals must have that characteristic.[10]

It is no exaggeration to say that the syllogism lies at the heart of legal writing.[11] Consider these examples taken from watershed Supreme Court opinions:

Marbury v. Madison[12]

> The Judicial Department's province and duty is to say what the law is.
> The Supreme Court is the Judicial Department.

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8. NEW ESSAYS CONCERNING HUMAN UNDERSTANDING 559 (1916).

9. JOSEPH GERARD BRENNAN, A HANDBOOK OF LOGIC 64 (1957).

10. To be sure, there are other forms of deductive syllogism, but we have deliberately confined our discussion to the "All men are mortal" type: the categorical deductive syllogism. Thus, there is no mention of the Hypothetical Syllogism that includes an if-then statement, or the Disjunctive Syllogism, in which one premise takes the form of a disjunctive proposition (either-or), and the other premise and conclusion are categorical propositions that either deny or affirm part of the disjunctive proposition. *See* LOGIC FOR LAWYERS, *supra* note 4, at 163-168 & 158-163 for help with these sorts of syllogisms.

11. *See e.g.*, RICHARD POSNER, THE PROBLEMS OF JURISPRUDENCE 38-39 (1990) (describing the strength of the syllogism in legal reasoning).

12. 1 Cranch 137 (1803).

Therefore the province and duty of the Supreme Court is to say what the law is.

Youngstown Sheet & Tube Co. v. Sawyer[13]

The President's power to issue an order must stem from an act of Congress or the Constitution.

Neither an act of Congress nor the Constitution gives the President the power to issue the order.

Therefore the President does not have the power to issue the order.

Brown v. Board of Education[14]

Unequal educational facilities are not permitted under the Constitution.

A separate educational facility for black children is inherently unequal.

Therefore a separate educational facility for black children is not permitted under the Constitution.

Griswold v. Connecticut[15]

A law is unconstitutional if it impacts the zone of privacy created by Bill of Rights.

The law banning contraceptives impacts the zone of privacy created by the Bill of Rights.

Therefore the law banning contraceptives is unconstitutional.

We urge all law students to get in the habit of thinking in syllogisms. When briefing a case as you prepare a class assignment, the skeleton of the deductive syllogism should always poke through in your description of the case's rationale. Young attorneys should probably tattoo this on the back of their hands—or at least post it above their keyboards: Whenever possible, make the arguments in your briefs and memos in the form of syllogisms. A clear, well-constructed syllogism ensures each conclusion is well-supported with

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13. 343 U.S. 579 (1952).

14. 349 U.S. 294 (1955).

15. 381 U.S. 479 (1965).

evidence, and gives a judge recognizable guideposts to follow as he sherpas the law along his desired footpath.[16]

But how, you might ask, does a new lawyer learn to construct valid syllogisms? Some people come to this ability instinctively. Just as some musicians naturally possess perfect pitch, some thinkers have logical instincts. Luckily for the rest of us, the skill can be learned through patience and practice. We start with the basics. To shape a legal issue in the form of a syllogism, begin by stating the general rule of law or widely-known legal rule that governs your case as your major premise. Then, in your next statement, the minor premise, describe the key facts of the legal problem at hand. Finally, draw your conclusion by examining how the major premise about the law applies to the minor premise about the facts. Like this:

> **Major Premise:** The Eighth Amendment prohibits cruel and unusual punishment by a state.
> **Minor Premise:** Executing a minor is cruel and unusual punishment by a state.
> **Conclusion:** Executing a minor is forbidden by the Eighth Amendment.[17]

Although this might look simple, constructing logically sound syllogisms requires a lot of grunt work. You must thoroughly research the law's nooks and crannies before you can confidently state your major premise. And you must become sufficiently knowledgeable about your case to reduce key facts to a brief yet accurate synopsis.

If you find yourself having trouble organizing a brief or memo, try shoehorning your argument into this generic model, which is based on the argument made by prosecutors in nearly every criminal case:

Major premise: **[Doing something]** [violates the law.]
Minor premise: *[The defendant]* **[did something.]**
Conclusion: *[The defendant]* [violated the law.]

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16. The foremost advocate of clear rules and formalism in American jurisprudence may be Justice Antonin Scalia. *See* William Huhn, *The Stages of Legal Reasoning: Formalism, Analogy, and Realism*, 48 VILL. L. REV. 305, 310 (2003). Justice Scalia argues that a formalist approach to legal reasoning ensures predictability and fairness. Antonin Scalia, *The Rule of Law as the Law of Rules*, 56 U. CHI. L. REV. 1175, 1182 (1989).

17. *See* Roper v. Simmons, 543 U.S. 551 (2005).

The prosecutor's model can serve as a useful template for most legal problems. Using it will help you reduce your arguments to their most essential parts.

In addition to providing a useful template, the above example reflects the fact that the three parts of a syllogism—the two premises and conclusion—are themselves built from three units. Logicians call these units "terms." Two terms appear in each statement: the "major term" in the major premise and conclusion, the "minor term" in the minor premise and conclusion, and the "middle term" in the major and minor premises but not in the conclusion. Notice that the middle term covers a broad range of facts, and that, if the conclusion is to be valid, the minor term must be a fact that is included within the middle term. Although the jargon can get confusing, the basic idea isn't hard to grasp: Each statement in a syllogism must relate to the other two.

B. Finding Syllogisms in Legal Writing

But wait!—you might be thinking—this syllogism business is too simple: opinions and memos are never so straightforward. Well, yes and no. The syllogism is simple, and indeed it does undergird most legal arguments, but sometimes you have to dig a bit below the surface to excavate syllogisms. The fact that syllogisms aren't immediately evident doesn't mean that the writing is sloppy, or that it doesn't use syllogisms. But it does mean that you'll have to work a bit harder as a reader. One logician notes that "an argument's basic structure . . . may be obscured by an excess of verbiage . . . , But an argument's structure may also be obscured for us . . . because it is too sparse and has missing components. Such arguments may appear sounder than they are because we are unaware of important assumptions made by them . . . ."[18]

Consider this one-sentence argument penned by Justice Blackmun in his *Roe v. Wade* opinion:

> This right of privacy, whether it be founded in the Fourteenth Amendment's concept of personal liberty and restrictions upon state action, as we feel it is, or, as the District Court determined, in the Ninth Amendment's reservation of rights to the people, is broad enough to encompass a woman's decision whether or not to terminate her pregnancy.[19]

Implicit within Justice Blackmun's statement is the following syllogism:

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18. S. MORRIS ENGEL, WITH GOOD REASON: AN INTRODUCTION TO INFORMAL FALLACIES 20 (1994).

19. 410 U.S. 113, 153 (1973).

Major Premise: The right of privacy is guaranteed by the Fourteenth or Ninth Amendment.

Minor Premise: A woman's decision to terminate her pregnancy is protected by the right of privacy.

Conclusion: Therefore, a woman's decision whether to terminate her pregnancy is protected by the Fourteenth or Ninth Amendment.

The ideas are floating around in Judge Blackmun's sentence, but it requires some work on the reader's part to parse them into two premises and a conclusion.

Sometimes it's more than a matter of rearranging sentences and rephrasing statements to match up with the syllogistic form. Sometimes a legal writer doesn't mention all parts of the syllogism, leaving you to read between the lines. Logicians are certainly aware that an argument can be founded on a syllogism although not all parts of the syllogism are expressed. They even have a name for such an argument: an enthymeme. Often, enthymemes are used for efficiency's sake. If a premise or conclusion is obvious, then writer can save her precious words to make less obvious points. Even a kindergarten teacher might find the full expression of a syllogism to be unnecessary: The teacher could say, "Good girls get stars on their foreheads; Lisa is a good girl; Lisa gets a star on her forehead"—but she's more likely to say, "Lisa gets a star on her forehead because she is a good girl." In logic-speak, the teacher would be omitting the major premise because it is generally understood that good girls get stars on their foreheads.

Judges and lawyers write for more educated audiences—or so we hope—and so as a law student you had better be ready for hosts of enthymemes.[20] The Third Circuit employed one in *Jones & Laughlin Steel, Inc. v. Mon River Towing, Inc.*[21] That decision was founded on the following syllogism:

Major Premise: Any federal procedural rule that conflicts with Rule 4 of the Federal Rules of Civil Procedure is superceded by Rule 4.

Minor Premise: Section 2 of the Suits in Admiralty Act is a federal procedural rule that conflicts with Rule 4 of the Federal Rule of Civil Procedure.

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20. The philosopher Ludwig Wittgenstein argued that the use of enthymemes is commonplace. He noted, "The stove is smoking, so the chimney is out of order again. (And that is how the conclusion is drawn! Not like this: The stove is smoking, and whenever the stove smokes the chimney is out of order; and so . . .")." LUDWIG WITTGENSTEIN, REMARKS ON THE FOUNDATIONS OF MATHEMATICS 40 (5th ed. 2001).

21. 772 F.2d 62 (3d. Cir. 1985).

Conclusion: Rule 4 supersedes Section 2 of the Suits in Admiralty Act.

In the text of the opinion, however, the court left out a key part of the minor premise: it never stated that Section 2 of the Suits in Admiralty Act actually conflicts with Rule 4 of the Rules of Civil Procedure. The court can hardly be faulted for not explicitly stating the conflict. All parties involved recognized the conflict, and the court avoided needless words by leaving the conflict implicit. But an astute reader of the case should recognize that a bit of work on her part is necessary in order to develop the enthymeme into a full-fledged syllogism.

In addition to not handing the reader syllogisms on a platter, legal writers also have the tendency to pile one syllogism on top of another. Not surprisingly, logicians have a term for this, too, but for once it is a term that makes sense and is easy to remember: a series of syllogisms in which the conclusion of one syllogism supplies a premise of the next syllogism is known as a polysyllogism. Typically, polysyllogisms are used because more than one logical step is needed to reach the desired conclusion. Be on the lookout for something like this as you pick apart a complex legal opinion:

All men are mortal.
Socrates is a man.
Therefore Socrates is mortal.

All mortals can die.
Socrates is mortal.
Therefore Socrates can die.

People who can die are not gods.
Socrates can die.
Therefore Socrates is not a god.

You have been warned: watch for enthymemes and polysyllogisms in every opinion or legal memo or brief that you read, and be aware of them in your own writing. Your arguments will be improved.

C. Watch Out!: Flawed Syllogisms

A syllogism is a powerful tool because of its rigid inflexibility. If the premises of a syllogism are properly constructed, the conclusion *must* follow.[22] But beware of bogus arguments masquerading as syllogisms.[23] For example, consider the following:

Some men are tall.
Socrates is a man.
Therefore Socrates is tall.

It looks something like a syllogism, but you have no doubt spotted the flaw: knowing that *some* men are tall isn't enough for you to conclude that a particular man is tall. He might fall into the group of other men about whom we know nothing, and who might be tall, but who also might be short. This type of non-syllogism got past the U.S. Supreme Court in the Dred Scott case, in which the Court held that people of African descent, whether or not they were slaves, could never be citizens of the United States. The dissenting opinion noted that the Court's ruling relied on a bad syllogism, simplified here:

Major Premise: At the time of the adoption of the Constitution, *some* states considered members of the black race to be inferior and incapable of citizenship and of suing in federal court.
Minor Premise: Dred Scott's ancestors at the time of the Constitution were members of the black race.
Conclusion: Therefore, Dred Scott's ancestors were considered to be inferior and incapable of citizenship and of suing in federal court.

Mistakes of this sort remain extremely common in legal writing. Certain buzzwords, however, can help distinguish valid syllogisms from fallacious ones. Alarm bells should sound immediately if you spot terms in the major premise like "some," "certain," "a," "one," "this," "that," "sometimes," "many," "occasionally," "once," or "somewhere." Remember at all costs: the principle behind the syllogism is that what's true of the universal is true of the specific. In deductive reasoning, you reason from the general to the particular. Accordingly, if you're unsure about the nature of the general, you can't draw proper conclusions about the particular.

Logical errors, unfortunately, are often tough to catch. Here is a different one:

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22. *See* DAVID KELLEY, THE ART OF REASONING 239 (1998).

23. For an extended discussion of flawed syllogisms, see LOGIC FOR LAWYERS, *supra* note 4, at 145-228.

Major Premise: All superheroes have special powers.
Minor Premise: Superman has special powers.
Conclusion: Superman is a superhero.

Unless you're an avid comic book reader, it might take a moment to spot the misstep: Knowing that every superhero has special powers doesn't allow you to conclude that everyone with special powers is a superhero. Recall again the golden rule of the syllogism: you can only draw a conclusion about the particular (Superman, in this case) after you demonstrate that it's part of the universal class. Thus, a correct syllogism would look like this:

Major Premise: All superheroes have special powers. [General statement about a class]
Minor Premise: Superman is a superhero. [Statement that an individual belongs to the class]
Conclusion: Superman has special powers. [Conclusion that the individual has properties common to other members of the class]

Remember this: just because two things share a common property does not mean they also share a second property. Some other examples of this fallacy may help: Business executives read the *Wall Street Journal*, and Ludwig is a *Journal* reader, therefore Ludwig is a business executive—WRONG! All law students are smart, and John is smart, therefore John is a law student—WRONG AGAIN! You get the idea.

So far, we've considered only two logical fallacies. Logicians have many more.[24] Although we cannot provide an exhaustive list of fallacies, here is a quick check you can run that often will uncover flaws in a deductive syllogism: Logicians have come up with a series of letters to identify different types of propositions: The letters "A" and "E" describe universal propositions—"A" being affirmative and "E" negative. Meanwhile "I" and "O" describe particular propositions—"I" being affirmative and "O" negative. The letters come from two Latin words: A̲ffi̲rmo (I affirm) and N̲ego̲ (I deny). Logicians would describe the three propositions in our friendly "All men are mortal" syllogism as AII. Now for the check: For the major premise to be valid, it must be either "A" or "E." You can't make a major premise out of an "I" or "O." The IAA

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24. For a discussion of informal fallacies, also known as material fallacies, see S. MORRIS ENGEL, WITH GOOD REASON: AN INTRODUCTION TO INFORMAL FALLACIES 89-245 (1994). For a discussion of formal fallacies, see IRVING M COPI & CARL COHEN, INTRODUCTION TO LOGIC 261-66 (1994).

form, for example, is not a valid syllogism. And your minor premise and conclusion must be either an "I" or an "O." If your tentative syllogism doesn't meet these requirements, you'll know something is wrong.

Certain logical errors crop up again and again, and so you should take particular care to avoid them: Don't cite inappropriate secondary authorities or cases from outside jurisdictions; logicians consider that an appeal to inappropriate authority.[25] Don't rely on attacks on your opponent's character.[26] Don't rely on appeals to emotion.[27] Don't rely on fast talking or personal charm to carry the day. A cool head coupled with rigorous legal research turns a case in your favor, not rhetorical tricks.

It is critical to read every legal document you come across with care. Bad reasoning can seem persuasive at first glance. Logical fallacies are especially hard to spot in briefs, memos, and court opinions because of the dense writing and complex fact patterns. Yet the effort is worthwhile. The ability to detect and avoid logical missteps will improve your writing immensely, and develop your ability to "think like a lawyer"—the skill that professors and partners so admire.

II. INDUCTIVE REASONING: GENERALIZATIONS

Deductive reasoning and its adherence to the "Socrates is Mortal" type of syllogism is the spine that holds our legal system together. Justice Cardozo estimated that at lest nine tenths of appellate cases "could not, with the semblance of reason, be decided in any way but one" because "the law and its application alike are plain," or "the rule of law is certain, and the application alone doubtful." After more than four decades on the bench, Judge Aldisert can confirm that Justice Cardozo's statement remains true today. In the language of logic, this means that practicing lawyers spend most of their time worrying about the minor premises of syllogisms: can the facts of the case be fit into the territory governed by a particular rule?

In law school, however, you will be asked to concentrate on the ten percent (or less) of cases that can't be resolved so easily. In the classroom, knotty and unsettled questions of law predominate. Where an issue of law is unsettled and there is no binding precedent to supply a major premise for your syllogism, deductive logic is of no use to you. By focusing on such cases, your professors

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25. *Id.* at 219-24.

26. The fallacy of the personal attack, called an *ad hominem* in Latin, "diverts attention away from the question being argued by focusing instead on those arguing it." *Id.* at 198.

27. *Id.* at 209.

will drag you kicking and screaming into the land of induction, the second category of logic.

Inductive generalization is a form of logic in which big, general principles are divined from observing the outcomes of many small events.[28] In this form of inductive logic, you reason from multiple particulars to the general. To see how this works, suppose that you are asked to determine whether all men are mortal—the premise of the first syllogism we discussed. If nobody hands you the simple statement "all men are mortal" and you lack a way of deducing it, you have to turn to inductive reasoning. You might use what you know about particular men and their mortality, as follows:

Plato was a man and Plato was mortal.

Julius Caesar was a man and Julius Caesar was mortal.

George Washington was a man and George Washington was mortal.

John Marshall was a man and John Marshall was mortal.

Ronald Reagan is a man and Ronald Reagan is mortal.

Therefore, all men are mortal.

The principle underlying this way of thinking is that the world is sufficiently regular to permit the discovery of general rules. If what happened yesterday is likely to happen again today, we may use past experience to guide our future conduct. The contrast with deductive reasoning is stark. Whereas syllogisms are mechanical and exact—if the premises are true and properly assembled, the conclusion *must* be true—inductive logic is not so absolute.[29] It does not produce conclusions *guaranteed* to be correct, no matter how many examples scholars assemble. Thousands of great men may live and die each year, but we will never know with absolute certainty whether every man is mortal. Thus, inductive reasoning is a logic of probabilities and generalities, not certainties. It yields workable rules, but not proven truths.

The absence of complete certainty, however, does not dilute the importance of induction in the law. As we stated at the outset, we look to inductive reasoning when our legal research fails to turn up a hefty, hearty precedent that controls the case. When there is no clear statute—no governing authority—to provide the major premise necessary for a syllogism, the law student must build the major premise himself. To use Lord Diplock's phrase, this requires

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28. *See* JOHN H. HOLLAND, ET AL., INDUCTION: PROCESS OF INFERENCE, LEARNING, AND DISCOVERY (1986). For an extended discussion on inductive inference in the law, see Dan Hunter, *No Wilderness of Single Instances: Inductive Inference in Law*, 48 J. LEG. EDUC. 365-401 (1998).

29. For a discussion on the differences between inductive and deductive logic, see Copi, *supra* note 24, at 57-61.

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him to draw upon "the cumulative experience of the judiciary"—the specific holdings of other cases.[30] Once he has assembled enough case law, he tries to fashion a general rule that supports his position. You might ask, how does this work in the real world? Let's start with something mundane. Suppose a professor asks you to determine what happens to the contents of a jointly-leased safety deposit box if one of the leasees dies unexpectedly. Do all of the contents pass to the survivor, or does the dead man's estate claim his possessions? The Oklahoma Supreme Court faced this question in Estate of Stinchcomb.[31] Finding that the state had no binding case law on point, the court turned to inductive reasoning. Its research demonstrated that judges in Illinois, Nevada, and Massachusetts had all ruled in favor of the dead man's estate. From these individual examples, the Oklahoma Supreme Court inferred the general rule that "a joint lease in and of itself alone, does not create a joint tenancy in the contents of the box."[32]

Inductive generalizations, then, are easy enough to understand. You can get in trouble using them, however. Most importantly, you must be careful to assemble a sufficient number of examples before shaping a far-reaching rule, or you will be guilty of the Fallacy of Hasty Generalization.[33] In logic-speak, this fallacy occurs when you construct a general rule from an inadequate number of particulars.[34] It is the bugaboo of inductive reasoning and often surfaces in casebooks and in classroom discussions, as well as on TV talk-shows and in newspaper editorials. Think about your overeager classmates who rely on nothing more than their personal life experiences to justify outlandish policy proposals. They're often guilty of creating bogus general rules from exceptional circumstances. Judges, lawyers, and law students all must be careful not to anoint isolated instances with the chrism of generality.

The difficulty comes in knowing how many instances are sufficient to make a generalization. Three? Ten? Forty thousand? This is where the art comes in. As a rule of thumb, the more examples you find, the stronger your argument becomes. In O'Conner v. Commonwealth Edison Co., a federal judge in Illinois lambasted an expert witness for attempting to formulate a universal medical rule based on his observation of only five patients:

> Based on the five patients [Dr. Scheribel] has observed with cataracts induced by radiation therapy, he developed his "binding universal rule"

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30. Dorset Yacht Co. v. Home Office, 1970 A̲pp̲. C̲as̲. 1004, 1057-71 (Lord Diplock).

31. Estate of Stinchcomb, 674 P.2d 26 (Okla. 1983).

32. *Id.* at 30.

33. *See, e.g.*, S. M̲orris̲ E̲ngel̲, W̲ith̲ G̲ood̲ R̲eason̲: A̲n̲ I̲ntroduction̲ to̲ I̲nformal̲ F̲allacies̲ 137-40 (1994). Hasty generalization is sometimes called converse accident.

34. W̲illiam̲ L. R̲eese̲, D̲ictionary̲ of̲ P̲hilosophy̲ and̲ R̲eligion̲ 168 (1980).

that he applied to O'Conner, thus committing the logical fallacy known as Converse Accident (hasty generalization). . . . It occurs when a person erroneously creates a general rule from observing too few cases. Dr. Scheribel has illogically created a "binding universal rule" based upon insufficient data.

For example, observing the value of opiates when administered by a physician to alleviate the pains of those who are seriously ill, one may be led to propose that narcotics be made available to everyone. Or considering the effect of alcohol only on those who indulge in it to excess, one may conclude that all liquor is harmful and urge that its sale and use should be forbidden by law. Such reasoning is erroneous . . . .[35]

Don't let yourself make the same mistake.

Raw numbers are not enough to give you a reliable generalization, however. Consider this classic blunder: In 1936, *Literary Digest* magazine conducted a massive polling effort to predict the outcome of the Presidential election between Alf Landon and Franklin Roosevelt. The *Digest* polled well over two million people, and the vast majority indicated they would vote for Landon (keep in mind that modern news organizations base their polls on the responses of 1,000 people). In the actual election, however, Roosevelt won 523 electoral votes and Landon received only eight. How did *Literary Digest* get it so wrong when it had crafted its rule from a massive number of particular examples? It seems the Digest focused its polling efforts on car owners—an unrepresentative group of the American public in 1936.[36] From this example it should become clear that the strength of an inductive argument rests not only on the number of examples you turn up to support your generalization, but also on the representativeness of the sample size. Keep this in mind when your opponent makes an argument based solely on the use of statistics, as is the case in many antitrust, securities, and discrimination claims.

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35. O'Conner v. Commonwealth Edison Co., 807 F. Supp. 1376, 1390-91 (C.D. Ill. 1992).

36. The *Literary Digest* had successfully predicted the winner of every presidential election since 1916. In 1936, the *Digest* polled 2.4 million Americans and predicted that Alf Landon would win roughly 57% of the vote. The *Digest* ran into trouble because it composed its polling list from telephone books and vehicle registrations. In 1936, when only 40% of households owned a telephone, these lists included only the wealthiest Americans. In the past such data had provided accurate predictions because rich and poor voters tended to cast similar votes. However, during the Great Depression economic class became a key indicator of voting behavior. *See* DAVID L. FAIGMAN ET AL., MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY § 3-2.2.1 (1997).

You will never completely escape the risks posed by the fallacy of hasty generalization. We can never know with certainty that an inductive generalization is true. The best that can be hoped for is that expert research and keen attention to statistics will divine workable rules that are grounded in the wisdom of human experience. If your professor demands absolute certainty of you, you'll have to explain to him that it cannot be achieved, at least not with an inductive generalization. Notwithstanding its shortcomings, the inductive generalization remains a vital tool because the ability to shape persuasive legal arguments when no clear precedent exists is often what separates a star attorney from your run-of-the-mill ambulance chaser.

III. ANALOGY[37]

Anyone who has struggled through a first-year torts course knows that hypothetical questions play a central role in the law school classroom. Professors invent elaborate factual scenarios and ask students to distill the correct result from a handful of cases read the night before. Then they change the situation slightly; does the answer change? Now alter a different parameter—same result, or a different one? The imaginative fact patterns do not end with law school[38]; judges, too, rely on outlandish hypotheticals to test the validity of a lawyer's argument. Yet, notwithstanding the importance of hypothetical questions in legal thinking, the ability to manage them remains poorly taught and rarely practiced. We believe that the careful use of analogy—a form of inductive reasoning—can get you past a nasty hypothetical.[39] Analogy can help a budding lawyer advance untested legal arguments in the classroom and the courtroom. We stress that mastering the

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37. *Nota Bene*: Read this section on analogy and reread and reread it over and over again until you understand it completely. Do this for two reasons: (a) Analogy lies at the heart of the hypotheticals tossed your way by the professors. (b) In many cases the law is clear and the sole question is application of the facts found by the fact finder to the law, and this requires inductive reasoning by analogy.

38. Such Socratic dialogues remain alive and well in legal education. *See* Anthony Kronman, *The Socratic Method and the Development of the Moral Imagination*, 31 U. TOL. L. REV. 647 (2000) ("The single most prominent feature of . . . American legal education is its heavy reliance on the so-called case method of instruction. By the case method I mean two things: first, the study of law through the medium of judicial opinions . . . and second, the examination of these opinions in a spirit that has often, and aptly, been described as 'Socratic.'").

39. Although we find it appropriate to classify analogy as a form of inductive reasoning, not all logicians agree. *See, e.g.*, JOSEPH GERARD BRENNAN, A HANDBOOK OF LOGIC 154 (1957) ("Current logicians . . . tend to regard all inductions as . . . inferences to generalizations [rather than reasoning by analogy].").

principles of analogy is not just another garden-variety lawyer's skill. Rather, it is one of the most crucial aspects of the study and practice of law.[40]

Unlike most concepts employed by logicians, the use of "analogy" is not confined to the realms of higher mathematics and philosophy.[41] Most law students, and even most laypersons, are familiar with formal analogies of the "Sun is to Day as Moon is to _____?" variety. The use of informal, off-the-cuff analogies guides most of our own everyday decision-making. I own a Honda Civic that doesn't overheat so I conclude that my friend's Honda Civic will never overheat. My eyes don't water when I cut an onion; I conclude that my brother's eyes won't water. This type of reasoning has a simple structure: (1) A has characteristic Y; (2) B has characteristic Y; (3) A also has characteristic Z; (4) Because A and B both have Y, we conclude that B also shares characteristic Z.[42] At base, analogy is a process of drawing similarities between things that appear different.

In the world of the law, analogies serve a very specific purpose. Attorneys use them to compare new legal issues to firmly established precedents.[43] Typically, this means that a current case is compared to an older one, and the outcome of the new case is predicted on the basis of the other's outcome.[444] Edward Levi, the foremost American authority on the role of analogy in the law, described analogical reasoning as a three step process: 1) establish similarities between two cases, 2) announce the rule of law embedded in the first case, and 3) apply the rule of law to the second case.[45] This form of reasoning is different from deductive logic or inductive generalization. Recall that deduction requires us to reason from universal principles to smaller, specific truths. And the process of generalization asks us to craft larger rules from a number of specific examples. Analogy, in contrast, makes one-to-one

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40. LLOYD L. WEINREB, THE USE OF ANALOGY IN LEGAL ARGUMENT (2005); LOGIC FOR LAWYERS, *supra* note 4 at 96; *but see* Richard A. Posner, *Reasoning by Analogy*, 91 CORNELL L. REV. 761 (2006) (book review). Judge Posner argues that while analogy is important in legal rhetoric as a mode of judicial expression it is "a surface phenomenon that obscures the role of policy considerations in judicial opinions." *Id.* at 765, 768.

41. Analogies also are commonly used to enliven descriptions. "The literary uses of analogy in metaphor and simile are tremendously helpful to the writer who strives to create a vivid picture in the reader's mind." IRVING M. COPI & KEITH BURGESS-JACKSON, INFORMAL LOGIC 164 (1996).

42. Cass R. Sunstein, *On Analogical Reasoning*, 106 HARV. L. REV. 741, 743 (1993).

43. STEVEN J. BURTON, AN INTRODUCTION TO LAW AND LEGAL REASONING 28 (1985); EDWARD LEVI, AN INTRODUCTION TO LEGAL REASONING 9-15 (1949).

44. Dan Hunter, *Reason is Too Large: Analogy and Precedent in Law*, 50 EMORY L.J. 1197 (2001).

45. EDWARD LEVI, AN INTRODUCTION TO LEGAL REASONING 1-2 (1948).

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comparisons that require no generalizations or reliance on universal rules.[46] In the language of logicians, analogy is a process of reasoning from the particular to the particular.

An example might help to clarify the distinction. Imagine you are asked to defend a client who received a citation for driving a scooter without a helmet. After scouring Westlaw, you find there's no controlling statute. There are, however, two precedents that could influence the result. One opinion holds that motorcyclists must wear helmets; the other case says that a helmet is not required to operate a bicycle. Does either control the issue in your case? Without a clear universal rule or past cases on point, deductive logic and inductive generalizations are of little help. Instead, you must rely on the power of analogy to convince a judge that helmet laws don't apply. To defend your client, you must suggest that driving a scooter is similar to riding a "fast bicycle." You might argue that small scooters can't go faster than well-oiled road bike. Thus, a scooter presents no more danger to its operator or other drivers than a bicycle. You could also argue that scooters, like bikes, can't be driven on highways. The process of drawing these comparisons and explaining why they are important is the heart of reasoning by analogy. The idea is to find enough similarities between the new case and old precedent to convince a judge that the outcomes must be the same.

A proper analogy should identify the respects in which the compared cases, or fact scenarios, resemble one another and the respects in which they differ. What matters is *relevancy*—whether the compared traits resemble, or differ from, one another in relevant respects.[47] A single apt comparison can be worth more than a host of not-quite-right comparisons. You might be wondering how to tell whether a comparison is a fruitful one or whether it's not quite right. Well, that is where art once again enters the picture. As John Stuart Mill remarked: "Why is a single instance, in some cases, sufficient for a complete induction, while in others myriads of concurring instances . . . go such a very little way towards establishing an universal proposition? Whoever can answer this question knows more of the philosophy of logic than the wisest of the ancients, and has solved the problem of induction."[48] Notwithstanding the best efforts of logicians, no one has devised a mathematical equation for

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46. Dan Hunter, *Teaching and Using Analogy in Law*, J. ASS'N LEGAL WRITING DIRECTORS 151, 154 (2006).

47. STEVEN J. BURTON, AN INTRODUCTION TO LAW AND LEGAL REASONING 31 (1985). Burton explains, "The judge in a law case . . . is not free to assign importance to the similarities or differences between cases on any ground whatsoever. The judge's duty is to decide that question in accordance with the law. But it is most difficult to give a satisfactory account of what it might mean in common law adjudication to decide in accordance with the law. This is where the problem of [relevancy] arises." *Id.*

48. JOHN STUART MILL, A SYSTEM OF LOGIC RATIOCINATION AND INDUCTIVE 206 (8th ed. 1916).

determining whether an analogy is strong or weak. "It is a matter of judgment, not mechanical application of a rule."[49] Thinking back to our scooter example, your opponent will argue vigorously that a scooter resembles a motorcycle because both have quick-starting, gas-powered engines that are beyond human control. This comparison may strike the judge as more powerful than yours, convincing him to rule against your client.

The Court of Appeals for the Third Circuit discussed all of these principles in detail in an important class action antitrust case where the principal issue on appeal was whether the holding in a case called *Newton*[50] applied to the case at bar:

> For Appellants' argument to prevail, therefore, they must demonstrate that the facts in *Newton* are substantially similar to the facts in the case at bar, what logicians call inductive reasoning by analogy, or reasoning from one particular case to another. To draw an analogy between two entities is to indicate one or more respects in which they are similar and thus argue that the legal consequence attached to one set of particular facts may apply to a different set of particular facts because of the similarities in the two sets. Because a successful analogy is drawn by demonstrating the resemblances or similarities in the facts, the degree of similarity is always the crucial element. You may not conclude that only a partial resemblance between two entities is equal to a substantial or exact correspondence.
>
> Logicians teach that one must always appraise an analogical argument very carefully. Several criteria may be used: (1) the acceptability of the analogy will vary proportionally with the number of circumstances that have been analyzed; (2) the acceptability will depend upon the number of positive resemblances (similarities) and negative resemblances (dissimilarities); or (3) the acceptability will be influenced by the relevance of the purported analogies.[Citing logicians]
>
> For Appellants to draw a proper analogy, they had the burden in the district court, as they do here of showing that the similarities in the facts of the two cases outweigh the differences. They cannot do so, for two significant reasons.

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49. IRVING M. COPI & KEITH BURGESS-JACKSON, INFORMAL LOGIC 127 (1996).

50. Newton v. Merrill Lynch, 259 F.3d 154 (3d. Cir. 2001).

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. . . First, in *Newton* it was clear that not all members of the putative class sustained injuries; here, all members sustained injuries because of the artificially increased prices. Secondly, in *Newton* there were hundreds of millions of stock transactions involved, thus making the putative class extremely unmanageable; here, an astronomical number of transactions is not present. [Thus, their argument fails.][51]

Let's turn to other examples of the process of analogy: Imagine you discover that Able Automobile Company is liable for violating the antitrust laws by requiring a tie-in purchase of a refrigerator manufactured by Mrs. Able with the purchase of any Able car. It is not difficult to see by analogy that liability also would follow from these facts: Baker Automobile Company requires a tie-in purchase of a refrigerator manufactured by Mrs. Baker if you want to buy a Baker Mustang.

But consider the following: State College had a championship basketball team last year. Team members came from high schools A, B, C and D. State College has recruited new players from high schools A, B, C and D for this year's team. Therefore, State College will have a championship basketball team this year. Is the resemblance relevant? We must ask if the resemblance—players from the same high schools—is meaningful. Does it help us get to the conclusion we seek to draw? If one good player came from a particular school, does that mean that another player is likely to be similarly good? Probably not, unless the high school is extremely unusual and has only good basketball players. More likely, what we have here is an analogy based on irrelevant similarities, and such an analogy is of no use at all.[52]

As mentioned earlier, law professors love to test your ability to work with analogies by inventing grueling hypotheticals. They do this for a few reasons. First, as we've already discussed, the imagined fact patterns force you to grapple with questions of law that aren't amenable to syllogisms. Second, a professor can easily and repeatedly change the facts of a hypo, allowing him to ask questions of many students, and to probe the boundaries of a particular legal issue. Finally, the fear of getting trapped in the tangle of a knotty question encourages students to study the law with care and to absorb its details. If you do find yourself in the Socratic spotlight, remember the basic principles of analogy; they can be your lifeline. Begin by discussing the facts of a similar case that you are familiar with, and then lay out particulars of the hypothetical the professor has asked. Draw as many comparisons between the

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51. In re Linerboard Antitrust Litig., 305 F.3d 145, 156-57 (3d Cir. 2002) (citations omitted).

52. The "fallacy of weak analogy" occurs when the compared objects bear little resemblance to each other. Irving M. Copi & Keith Burgess-Jackson, Informal Logic 126-27 (1996).

two cases as you can. If the relevant similarities outweigh the relevant differences, the outcomes of the cases should be the same. The more practice you get working with analogies, the more adept you will become at articulating why certain similarities or differences are relevant, and the better you will fare when it's your turn to face the music.

IV. LOGICAL LIMITS: WHEN THERE IS MORE TO THE STORY

We hope we have convinced you that logic is the lifeblood of the law, and that understanding basic logical forms will assist you both in law school and in your practice as a lawyer. We would be remiss, however, if we were to send you out into the world without acknowledging that there is more to the law than assembling logical expressions.[53]

Consider the following:

All federal judges are body builders.
Judge Aldisert is a federal judge.
Therefore, Judge Aldisert is a body builder.

What's wrong with this statement? It's a rock-solid syllogism, adhering to the blueprint of logical validity expressed by the "Socrates" syllogism. Just the same, Judge Aldisert does not spend much time pumping iron. You see the problem, of course: the major premise is false. Not all federal judges are body builders. In fact, we doubt any of them are. The point is an obvious one, but an important one: make sure your premises are true. If you use an untrue premise as a lawyer, it's an invitation to the other side to pillory you. If you do so as a judge, you may fashion a dangerous precedent. Consider the infamous Dred Scott case. The crucial syllogism used by the majority was as follows:

Major Premise: At the time of the adoption of the Constitution, *all* states considered members of the black race to be inferior and incapable of citizenship and of suing in federal court.

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53. We are aware of criticisms suggesting that logic has little place in legal reasoning. With the rise legal realism, many observers feel that politics, not logic, drives the outcome of most cases. *See e.g.*, Derrick Bell, *Who's Afraid of Critical Race Theory?*, U. ILL. L. REV. 893, 899-900 (1995). (arguing that the law is "not a formal mechanism for determining outcomes in a neutral fashion—as traditional legal scholars maintain–but is rather a ramshackle ad hoc affair whose ill-fitting joints are soldered together by suspect rhetorical gestures, leaps of illogic, and special pleading tricked up as general rules all in a decidedly partisan agenda . . . .").

Minor Premise: Dred Scott's ancestors at the time of the Constitution were members of the black race.

Conclusion: Therefore, Dred Scott's ancestors were considered to be inferior and incapable of citizenship and of suing in federal court.

As discussed in Part I, the dissenting opinion pointed out that only *some* state legislatures labeled blacks inferior at the time of the adoption of the Constitution. Other states—namely New Hampshire, Massachusetts, New York, New Jersey and North Carolina—maintained that all free-born inhabitants, even though descended from African slaves, possessed the right of franchise of electors on equal terms with other citizens. Once the "all" in the majority's major premise is replaced with "some," the syllogism fails to hold water.

Separately, logic is not the whole game. Even if your premises are true and your logical statements constructed properly, it is crucial to recognize that judges are motivated by more than the mandates of logic. As Judge Aldisert has said, "[w]e judges come to our robes bearing the stigmata of our respective experiences."[54] Judges have notions of how things should be—of what is wrong and what is right—and often strive to do justice as much as to fulfill the mandates of precedent. They have biases, too. In reading cases, writing briefs and arguing before a court, you will be more effective if you flesh out the logical bones of your arguments and attempt to appeal to the judge in other ways as well.

But always bear in mind: *An argument that is correctly reasoned may be wrong, but an argument that is incorrectly reasoned can never be right.* You may find the discipline of parsing legalese into logical forms to be time-consuming and arduous at first, but as you become more comfortable with logic's frameworks, you will find that the exercise helps you more efficiently peel a case back to its essence. A solid footing in logic will help you feel more secure when you find yourself in a complex doctrinal thicket. And while the fundamentals of logic laid out in this article will not give you a magic carpet on which you can float above the legal briar patch, we believe they will give you a machete that will help you start hacking your way through the tangle.

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54. United States v. Jannotti, 673 F.2d 579, 612 (3d Cir. 1982).