The Role of Reasoning in Constructing a Persuasive Argument

<http://www.orsinger.com/PDFFiles/constructing-a-persuasive-argument.pdf>
[The pdf version of this document is web-enabled with linking endnotes]

Richard R. Orsinger
richard@momnd.com
http://www.orsinger.com

McCurley, Orsinger, McCurley,
Nelson & Downing, L.L.P.

San Antonio Office:
1717 Tower Life Building
San Antonio, Texas 78205
(210) 225-5567
http://www.orsinger.com

and

Dallas Office:
5950 Sherry Lane, Suite 800
Dallas, Texas 75225
(214) 273-2400
http://www.momnd.com

State Bar of Texas
37th ANNUAL ADVANCED FAMILY LAW COURSE
August 1-4, 2011
San Antonio

CHAPTER 11

Table of Contents

CURRICULUM VITAE OF RICHARD R. ORSINGER

Education: Washington & Lee University, Lexington, Virginia (1968-70)
University of Texas (B.A., with Honors, 1972)
University of Texas School of Law (J.D., 1975)

Licensed: Texas Supreme Court (1975); U.S. District Court, Western District of Texas (1977-1992; 2000-present); U.S. District Court, Southern District of Texas (1979); U.S. Court of Appeals, Fifth Circuit (1979); U.S. Supreme Court (1981)

Board Certified: Texas Board of Legal Specialization Family Law (1980), Civil Appellate Law (1987)

Organizations and Committees:

Chair, Family Law Section, State Bar of Texas (1999-2000)
Chair, Appellate Practice & Advocacy Section, State Bar of Texas (1996-97)
Chair, Continuing Legal Education Committee, State Bar of Texas (2000-02)
Vice-Chair, Continuing Legal Education Committee, State Bar of Texas (2002-03)
Member, Supreme Court Advisory Committee on Rules of Civil Procedure (1994-2011); Chair, Subcommittee on Rules 16-165a
Member, Pattern Jury Charge Committee (Family Law), State Bar of Texas (1987-2000)
Supreme Court Liaison, Texas Judicial Committee on Information Technology (2001-2005)
Tx. Bd. of Legal Specialization, Civil Appellate Law Advisory Commission (Member and Civil Appellate Law Exam Committee (1990-2006; Chair 1991-1995); Family Law Advisory Commission (1987-1993)
Member, Supreme Court Task Force on Jury Charges (1992-93)
Member, Supreme Court Advisory Committee on Child Support and Visitation Guidelines (1989, 1991; Co-Chair 1992-93; Chair 1994-98)
Member, Board of Directors, Texas Legal Resource Center on Child Abuse & Neglect, Inc. (1991-93)
President, Texas Academy of Family Law Specialists (1990-91)
President, San Antonio Family Lawyers Association (1989-90)
Associate, American Board of Trial Advocates
Fellow, American Academy of Matrimonial Lawyers
Director, San Antonio Bar Association (1997-1998)
Member, San Antonio, Dallas and Houston Bar Associations

Professional Activities and Honors:

One of Texas' Top Ten Lawyers in all fields, *Texas Monthly* Super Lawyers Survey (2010 - 3rd Top Point Getter)
Listed as one of Texas' Top Ten Lawyers in all fields, *Texas Monthly* Super Lawyers Survey (2009)
Recipient of the Franklin Jones, Jr. CLE Article Award for Outstanding Achievement in CLE (2009)
Listed as Texas' Top Family Lawyer, Texas Lawyer's *Go-To-Guide* (2007)
Listed as one of Texas' Top 100 Lawyers, and Top 50 Lawyers in South Texas, *Texas Monthly* Super Lawyers Survey(2003-2010)
Texas Academy of Family Law Specialists' *Sam Emison Award* (2003) for significant contributions to the practice of family law in Texas
Association for Continuing Legal Excellence Best Program Award for *Enron: The Legal Issues* (2002)
State Bar of Texas *Presidential Citation* "for innovative leadership and relentless pursuit of excellence for continuing legal education" (June, 2001)
State Bar of Texas Family Law Section's *Dan R. Price Award* for outstanding contributions to family law (2001)
State Bar of Texas *Gene Cavin Award for Excellence in Continuing Legal Education* (1996)
State Bar of Texas *Certificate of Merit*, June 1995, June 1996, June 1997 & June 2004
Listed in the BEST LAWYERS IN AMERICA: Family Law (1987-2011); Appellate Law (2007-2011)

Continuing Legal Education and Administration:

Course Director, State Bar of Texas:
- Practice Before the Supreme Court of Texas Course (2002 - 2005, 2007, 2009 & 2011)
- *Enron, The Legal Issues* (Co-director, March, 2002) [Won national ACLEA Award]
- Advanced Expert Witness Course (2001, 2002, 2003, 2004)
- 1999 Impact of the New Rules of Discovery
- 1998 Advanced Civil Appellate Practice Course
- 1991 Advanced Evidence and Discovery
- Computer Workshop at Advanced Family Law (1990-94) and Advanced Civil Trial (1990-91) courses
- 1987 Advanced Family Law Course. Course Director, Texas Academy of Family Law Specialists First Annual Trial Institute, Las Vegas, Nevada (1987)

Books and Journal Articles:

—Editor-in-Chief of the State Bar of Texas' TEXAS SUPREME COURT PRACTICE MANUAL (2005)

---Chief Editor of the State Bar of Texas Family Law Section's EXPERT WITNESS MANUAL (Vols. II & III) (1999)
---Author of Vol. 6 of McDonald Texas Civil Practice, on Texas Civil Appellate Practice, published by Bancroft-Whitney Co. (1992) (900 + pages)
---*A Guide to Proceedings Under the Texas Parent Notification Statute and Rules,* SOUTH TEXAS LAW REVIEW (2000) (co-authored)
---*Obligations of the Trial Lawyer Under Texas Law Toward the Client Relating to an Appeal,* 41 SOUTH TEXAS LAW REVIEW 111 (1999)
---*Asserting Claims for Intentionally or Recklessly Causing Severe Emotional Distress, in Connection With a Divorce*, 25 ST. MARY'S L.J. 1253 (1994), republished in the AMERICAN JOURNAL OF FAMILY LAW (Fall 1994) and Texas Family Law Service *NewsAlert* (Oct. & Dec., 1994 and Feb., 1995)
---Chapter 21 on *Business Interests* in Bancroft-Whitney's TEXAS FAMILY LAW SERVICE (Speer's 6th ed.)
---*Characterization of Marital Property*, 39 BAY. L. REV. 909 (1988) (co-authored)
---*Fitting a Round Peg Into A Square Hole: Section 3.63, Texas Family Code, and the Marriage That Crosses States Lines*, 13 ST. MARY'S L.J. 477 (1982)

SELECTED CLE ARTICLES AND SPEECHES

State Bar of Texas' [SBOT] **Advanced Family Law Course**: Intra and Inter Family Transactions (1983); Handling the Appeal: Procedures and Pitfalls (1984); Methods and Tools of Discovery (1985); Characterization and Reimbursement (1986); Trusts and Family Law (1986); The Family Law Case in the Appellate Court (1987); Post-Divorce Division of Property (1988); Marital Agreements: Enforcement and Defense (1989); Marital Liabilities (1990); Rules of Procedure (1991); Valuation Overview (1992); Deposition Use in Trial: Cassette Tapes, Video, Audio, Reading and Editing (1993); The Great Debate: Dividing Goodwill on Divorce (1994); Characterization (1995); Ordinary Reimbursement and Creative Theories of Reimbursement (1996); Qualifying and Rejecting Expert Witnesses (1997); New Developments in Civil Procedure and Evidence (1998); The Expert Witness Manual (1999); Reimbursement in the 21st Century (2000); Personal Goodwill vs. Commercial Goodwill: A Case Study (2000); What Representing the Judge or Contributing to Her Campaign Can Mean to Your Client: Proposed New Disqualification and Recusal Rules (2001); Tax Workshop: The Fundamentals (2001); Blue Sky or Book Value? Complex Issues in Business Valuation (2001); Private Justice: Arbitration as an Alternative to the Courthouse (2002); International & Cross Border Issues (2002); Premarital and Marital Agreements: Representing the Non-Monied Spouse (2003); Those Other Texas Codes: Things the Family Lawyer Needs to Know About Codifications Outside the Family Code (2004); Pearls of Wisdom From Thirty Years of Practicing Family Law (2005); The Road Ahead: Long-Term Financial Planning in Connection With Divorce (2006); A New Approach to Distinguishing Enterprise Goodwill From Personal Goodwill (2007); The Law of Interpreting Contracts: How to Draft Contracts to Avoid or Win Litigation (2008); Effect of Choice of Entities: How Organizational Law, Accounting, and Tax Law for Entities Affect Marital Property Law (2008); Practicing Family Law in a Depressed Economy, Parts I & II (2009); Property Puzzles: 30 Characterization Rules, Explanations & Examples (2009); Troubling Issues of Characterization, Reimbursement, Valuation, and Division Upon Divorce (2010); Separate & Community Property: 30 Rules With Explanations & Examples (2010)

SBOT's **Marriage Dissolution Course**: Property Problems Created by Crossing State Lines (1982); Child Snatching and Interfering with Possess'n: Remedies (1986); Family Law and the Family Business: Proprietorships, Partnerships and Corporations (1987); Appellate Practice (Family Law) (1990); Discovery in Custody and Property Cases (1991); Discovery (1993); Identifying and Dealing With Illegal, Unethical and Harassing Practices (1994); Gender Issues in the Everyday Practice of Family Law (1995); Dialogue on Common Evidence Problems (1995); Handling the Divorce Involving Trusts or Family Limited Partnerships (1998); The Expert Witness Manual (1999); Focus on Experts: Close-up Interviews on Procedure, Mental Health and Financial Experts (2000); Activities in the Trial Court During Appeal and After Remand (2002)

UT School of Law: Trusts in Texas Law: What Are the Community Rights in Separately Created Trusts? (1985); Partnerships and Family Law (1986); Proving Up Separate and Community Property Claims Through Tracing (1987); Appealing Non-Jury Cases in State Court (1991); The New (Proposed) Texas Rules of Appellate Procedure (1995); The Effective Motion for Rehearing (1996); Intellectual Property (1997); Preservation of Error Update (1997); TRAPs Under the New T.R.A.P. (1998); Judicial Perspectives on Appellate Practice (2000)

SBOT's **Advanced Evidence & Discovery Course**: Successful Mandamus Approaches in Discovery (1988); Mandamus (1989); Preservation of Privileges, Exemptions and Objections (1990); Business and Public Records (1993); Grab Bag: Evidence & Discovery (1993); Common Evidence Problems (1994); Managing Documents--The Technology (1996); Evidence Grab Bag (1997-1998); Making and Meeting Objections (1998 & 1999); Evidentiary Issues Surrounding Expert Witnesses (1999); Predicates and Objections (2000 & 2001); Building Blocks of Evidence (2002); Strategies in Making a Daubert Attack (2002); Predicates and Objections (2002); Building Blocks of Evidence (2003); Predicates & Objections (High Tech Emphasis) (2003)

SBOT's **Advanced Civil Appellate Practice Course**: Handling the Appeal from a Bench Trial in a Civil Case (1989); Appeal of Non-Jury Trials (1990); Successful Challenges to Legal/Factual Sufficiency (1991); In the Sup. Ct.: Reversing the Court of Appeals (1992); Brief Writing: Creatively Crafting for the Reader (1993); Interlocutory and Accelerated Appeals (1994); Non-Jury Appeals (1995); Technology and the Courtroom of the Future (1996); Are Non-Jury Trials Ever "Appealing"? (1998); Enforcing the Judgment, Including

While on Appeal (1998); Judges vs. Juries: A Debate (2000); Appellate Squares (2000); Texas Supreme Court Trends (2002); New Appellate Rules and New Trial Rules (2003); *Supreme Court Trends* (2004); Recent Developments in the *Daubert* Swamp (2005); Hot Topics in Litigation: Restitution/Unjust Enrichment (2006); The Law of Interpreting Contracts (2007); Judicial Review of Arbitration Rulings: Problems and Possible Alternatives (2008); The Role of Reasoning and Persuasion in the Legal Process (2010)

Various CLE Providers: SBOT Advanced Civil Trial Course: Judgment Enforcement, Turnover and Contempt (1990-1991), Offering and Excluding Evidence (1995), New Appellate Rules (1997), The Communications Revolution: Portability, The Internet and the Practice of Law (1998), Daubert With Emphasis on Commercial Litigation, Damages, and the NonScientific Expert (2000), Rules/Legislation Preview (State Perspective) (2002); College of Advanced Judicial Studies: Evidentiary Issues (2001); El Paso Family Law Bar Ass'n: Foreign Law and Foreign Evidence (2001); American Institute of Certified Public Accounts: Admissibility of Lay and Expert Testimony; General Acceptance Versus Daubert (2002); Texas and Louisiana Associations of Defense Counsel: Use of Fact Witnesses, Lay Opinion, and Expert Testimony; When and How to Raise a Daubert Challenge (2002); SBOT In-House Counsel Course: Marital Property Rights in Corporate Benefits for High-Level Employees (2002); SBOT 19th Annual Litigation Update Institute: Distinguishing Fact Testimony, Lay Opinion & Expert Testimony; Raising a Daubert Challenge (2003); State Bar College Spring Training: Current Events in Family Law (2003); SBOT Practice Before the Supreme Court: Texas Supreme Court Trends (2003); SBOT 26th Annual Advanced Civil Trial: Distinguishing Fact Testimony, Lay Opinion & Expert Testimony; Challenging Qualifications, Reliability, and Underlying Data (2003); SBOT New Frontiers in Marital Property: Busting Trusts Upon Divorce (2003); American Academy of Psychiatry and the Law: Daubert, Kumho Tire and the Forensic Child Expert (2003); AICPA-AAML National Conference on Divorce: Cutting Edge Issues–New Alimony Theories; Measuring Personal Goodwill (2006); New Frontiers` - Distinguishing Enterprise Goodwill from Personal Goodwill; Judicial Conference (2006); SBOT New Frontiers in Marital Property Law: Tracing, Reimbursement and Economic Contribution Claims In Brokerage Accounts (2007); SBOT In-House Counsel Course: When an Officer Divorces: How a Company can be Affected by an Officer's Divorce (2009); SBOT Handling Your First Civil Appeal The Role of Reasoning and Persuasion in Appeals (2011)

Foreword

[In 452 AD,]Attila, the leader of the Huns, who was called the scourge of God, came into Italy, inflamed with fury, after he had laid waste with most savage frenzy Thrace and Illyricum, Macedonia and Moesia, Achaia and Greece, Pannonia and Germany. He was utterly cruel in inflicting torture, greedy in plundering, insolent in abuse. . . .

Then [Pope Leo I] had compassion on the calamity of Italy and Rome . . . . The old man of harmless simplicity, venerable in his gray hair and his majestic garb, ready of his own will to give himself entirely for the defense of his flock, went forth to meet the tyrant who was destroying all things. He met Attila, it is said, in the neighborhood of the river Mincio, and he spoke to the grim monarch, saying "The senate and the people of Rome, once conquerors of the world, now indeed vanquished, come before thee as suppliants. We pray for mercy and deliverance. O Attila, thou king of kings, thou couldst have no greater glory than to see suppliant at thy feet this people before whom once all peoples and kings lay suppliant. Thou hast subdued, O Attila, the whole circle of the lands which it was granted to the Romans, victors over all peoples, to conquer. Now we pray that thou, who hast conquered others, shouldst conquer thyself The people have felt thy scourge; now as suppliants they would feel thy mercy."

As Leo said these things Attila stood looking upon his venerable garb and aspect, silent, as if thinking deeply. . . . Wherefore Attila was appeased, he who had raged as one mad. He by Leo's intercession, straightway promised a lasting peace and withdrew beyond the Danube.[1]

The Role of Reasoning in Constructing a Persuasive Argument

by

Richard R. Orsinger
Board Certified in Family Law
& Civil Appellate Law by the
Texas Board of Legal Specialization

I. THE IMPORTANCE OF PERSUASION. Persuasion is an important part of life at all levels. On the international stage, the British withdrawal from India, the fall of apartheid in South Africa, the collapse of the Soviet Union and its Eastern European puppet regimes and, more recently, the regime changes in Tunisia and Egypt, are powerful examples of persuasion by the public who convinced an entrenched political establishment to voluntarily relinquish its stranglehold on political power. Today, in our country, there is a tug-of-war over non-aligned voters on the question of the proper role of the Federal government, among nations, with the states, and in the lives of the America people. As lawyers, we persuade judges, juries, other lawyers, witnesses, clients, opposing parties, insurance adjusters, law enforcement, committees, the legislature, the public, even ourselves. At the personal level, we persuade and are persuaded by our parents and our children, our spouses and our neighbors, our bosses and our employees. Most of us have learned persuasion by observing others, and by developing persuasive skills through trial-and-error and practice. This Article takes an historical and analytical approach to persuasion. It is meant to make us more consciously aware of the process of persuasion, whether we are the persuaders or the persons being persuaded.

II. PERSUASION IN ARGUMENTATION. "Arguments give us reasons to accept, believe, or act."[2] In the Western world, the ancient Greeks began the study of verbal persuasion by analyzing argumentation, a study which they called "Rhetoric." Skill at argumentation was a valuable tool in ancient Athens and the other Greek city-states where political and legal matters were decided by majority vote of participating citizens, and there were no paid advocates (i.e., no lawyers). The Romans elaborated Greek principles into a formalistic framework. During the Roman Republic, Rhetoric emphasized political speech. When the ascendancy of the Julian Emperors extinguished political speech, Roman Rhetoric drifted to flowery speeches on ceremonial occasions. Medieval thinkers returned to the Roman Republican example, while pushing Logic into ascendancy, and developing a long list of flawed arguments called "Fallacies" to which they gave Latin names. During this era, when higher education was the sole province of the Catholic Church, the study of persuasion emphasized the use of reasoning to prove the existence of God and the use of speech to proselytize the Faith. The Renaissance led back to Greek thinking on persuasion, but logical reasoning remained in the forefront. With the rise of modern science, new skills of observation and mathematical calculation relegated persuasion to the realm of politics, law and ceremony. With the rise of the consumer society and especially with the advent of television, persuasion in the form of commercial advertising became pervasive. Argumentation is now seen to be part of normal everyday living. Recently, psychologists, communication theorists, and argument theorists, have developed new theories (nowadays called "models") to describe how persuasive arguments are created and delivered.

In the practice of law, we are constantly called upon to construct persuasive arguments. In constructing arguments, we use a variety of strategies, including reasoning from Premises to a Conclusion, making a Claim and supporting it with Data, comparing Examples, relying on eye witnesses and expert witnesses, interpreting statutes, citing case law precedent, arguing legal rules or princi-

ples, pointing out undesirable consequences, giving emotional appeals, and many more. This Article discusses theories of argumentation, old and new, and suggests approaches to constructing and evaluating good arguments.

III. BACKGROUND. The foundation for this Article is an article prepared for the State Bar of Texas's Advanced Civil Appellate Course (2010), *The Role of Reasoning and Persuasion in the Legal Process*. That article may be found in the State Bar of Texas' On-Line Library. An updated version is at <http://www.orsinger.com/PDF Files/role-of-reasoning-in-persuasion.pdf>. A succinct Power Point Presentation on Logic is available at <http://www.orsinger.com/PDFFiles/role-of-reasoning-PPT.pdf>. These on-line resources may be consulted for more detailed explanations of the ideas presented in this Article.

IV. USER'S GUIDE FOR THIS ARTICLE. Both speaker credibility and audience's emotions play an important part in persuasion, quite apart from the contribution that reasoning makes to persuasiveness. Speaker credibility and emotion are not the focus of this Article. Section V below of this Article gives an overview of this three-prong approach to persuasion. Speaker credibility and emotion are discussed in greater detail in *The Role of Reasoning and Persuasion in the Legal Process*, Sections XIV.A & B. The balance of this Article, however, deals with the rational parts of persuasive argument, and different ways to look at reason-based arguments, and different models of argumentation that have been put forth for how reason-based arguments are constructed and how they may be judged.

The oldest perspective on rational argumentation is formal Logic, which includes Deductive Reasoning and Inductive Reasoning. Deductive Reasoning is discussed in Sections VI.A.1 and VII.A of this Article. Inductive Reasoning is discussed in Sections VI.A.2 and VII.B of this Article. More recently, historically speaking, attention has been directed to Reasoning by Analogy. In routine legal cases, the law is applied in a deductive fashion, as when a statutory rule is applied to a particular set of facts to render a straightforward result. In difficult cases, where the legal rule to be applied is uncertain, or when the facts are such that it is unclear how the legal rule is to be applied, then lawyers and judges shift to Reasoning by Analogy. See Sections VI.A.3 and VII.C of this Article.

An overlooked part of the ancient Greeks' ideas about rational argumentation is the concept now known as Defeasible Arguments. The beauty and certainty of the rules of geometry and mathematics set the standard for argument evaluation for 2,000+ years and people modeled arguments along the lines of Deductive Reasoning–arguments where, given the truth of the assumptions, the conclusion would follow with 100% certainty. With the rise of modern science and modern mathematics in the 1600s, mathematicians developed probability theory and, several centuries after that, statistical probability. But this shift in focus from certain to probable outcomes did not go far enough to reach everyday arguments, since most outcomes in life situations are not certain, and the probabilities of various outcomes can only be guessed at, not calculated. So decisions about many business, professional, and personal issues are based on what we think is the best argument given the information we have at the time that the decision is made. The model for this is the Defeasible Argument, in which the best argument is adopted at some point in time and remains presumptively operational until additional facts require a change or until a better argument comes along to displace it. Defeasibility is now an accepted part of argumentation theory. See Section VI.B and VIII.

Aristotle's model of argumentation, where Arguments begin with Premises and end in Conclusions, held sway in argumentation theory from 2,300 BC until the 1950s and 1960s, when professors of Speech, and English, and later of Communications, mainly in America, abandoned the model as not reflecting the way most people think and argue. A pioneer in this effort was British Philosopher Stephen E. Toulmin, who proposed a model in which an Argument starts as a Claim, that is supported by Data, that connects to the Claim through rules or inferences that Toulmin

called Warrants. Toulmin's Data-Warrant-Claim model touched off a search for better argument modeling that has intensified in the field of artificial intelligence, where computer scientists are trying to design computer programs that can discern the best of competing arguments. Toulmin's simple model, even 50 years later, is still helpful in visualizing the way in which Arguments unfold. Toulmin's Model is discussed in Sections VI.C and IX.

Another rich tradition, dating back to the ancient Greeks, identifies flawed Arguments that frequently arise in argumentation. These flawed Arguments are called Fallacies, and a lengthy list of them has accumulated over 2,000 plus years of study. Recent thinking on Fallacies is that some fallacious arguments could be good or could be bad, depending on when and how they are used. A list of Fallacies is therefore a helpful tool for identifying both good and bad arguments. Fallacies are discussed in Sections VI.D and X.

The last approach to argumentation theory examined in this Article involves Argumentation Schemes, which identify common patterns of argumentation and set out their structural components. Each Argument Scheme examined in this Article are coupled with a set of Critical Questions which test the strength of the Argument Scheme. This approach to argumentation theory can be used to either analyze an Argument or to construct one. Argument Schemes are discussed in Section VI.E and XI.

The Article lastly discusses the role of prima facie evidence, presumptions, and burdens of proof in legal cases. These terms have several meanings and, as important as they are to litigation, efforts to distinguish their meanings have been only partially successful. Section XII attempts to unravel this ball of string.

The Endnotes to this Article are web-enabled, so clicking on them will take you to the cited authority (while the links are alive).

V. ARISTOTLE'S THREE COMPONENTS OF A PERSUASIVE SPEECH. The ancient Macedonian sage Aristotle (384 B.C. to 322 B.C.), wrote and published a famous and enduring work on the study of persuasive argumentation, which he named RHETORIC. In the book, Aristotle defined "Rhetoric" in this way:

> Rhetoric may be defined as the faculty of observing in any given case the available means of persuasion.

Aristotle distinguished Rhetoric from other fields of study, like medicine (which deals with what is healthy and unhealthy), or geometry (which deal with the properties of magnitudes), or arithmetic (which deals with numbers). Other fields deal with their special content. Rhetoric involves "the power of observing the means of persuasion on almost any subject presented."

Aristotle broke Rhetoric down into three areas:

> Of the modes of persuasion furnished by the spoken word there are three kinds. The first kind depends on the personal character of the speaker; the second on putting the audience into a certain frame of mind; the third on the proof, or apparent proof, provided by the words of the speech itself.

Today, Aristotle's three modes of persuasion are called Ethos, Pathos, and Logos. "Ethos" (the Greek word for "character") is the perceived trustworthiness of the speaker. "Pathos" (the Greek word for "suffering" or "experience") is the effect of a speech on an audience's emotions. "Logos" (the Greek word for "word") is the intellectual content of the speech that appeals to the audience's power of reasoning.[3]

This Article concentrates on the Logos component of persuasive argument. Ethos and Pathos are discussed in greater detail in Section XIV of the 2010 article, *The Role of Reasoning and Persuasion in the Legal Process*. It should be emphasized that an article, like the present one, that focuses exclusively on the rational part of an Argument, leaves much unsaid about the non-rational parts of persuasive speech. Those modes are examined in *The Role of Reasoning and Persuasion in the*

Legal Process, and in many, many articles on the internet.

A. ETHOS. In traditional Rhetoric theory, "Ethos" is persuasiveness attributable to the actual or perceived character of the speaker or writer. Aristotle viewed Ethos as something invented by the speaker and created during the speech. Aristotle commented: "[There is persuasion] through character whenever the speech is spoken in such a way as to make the speaker worthy of credence . . . . And this should result from the speech, not from a previous opinion that the speaker is a certain kind of person."[4] Roman Rhetoricians viewed Ethos differently, for in Republican Rome a person's credibility and the weight of his words were intertwined with his family history.[5] It is said that Ethos is influenced by the speaker's attitude toward the audience. This attitude can vary from formal to informal, and can vary within one speech. The speaker's attitude is conveyed to the audience through "tone." Tone is the feeling the audience perceives about the speaker's attitude. Tone is conveyed in many ways, including inflection, word choice, and sentence structure.

B. PATHOS. "Pathos" involves the emotional effect of a speech on the audience, as distinguished from its appeal to the intellect. Such emotions might include love, fear, patriotism, guilt, hate, joy, pity, attraction, etc. Emotional effect is often achieved through expressive and concrete language, emotionally-loaded words, honorific and pejorative words, emotional narratives or anecdotes, or vivid examples, that bring the issue being considered "to life," metaphors, similes, and symbols that trigger emotional reactions. Some writers include in Pathos appeals to an audience's sympathies, an effort to have the audience identify with the speaker or writer. Many of the Fallacies of Argumentation discussed in Section X below are in fact tried-and-true effective appeals to Pathos.

While an emotional appeal today is viewed by some as inferior to an intellectual argument, Aristotle did not view it that way. Aristotle saw humans as having a rational side and an emotional side. Since both the intellect and emotions are a part of human-ness, any study of persuasion must attend to the way that speakers and writers can affect listeners both through thoughts and through emotions.

An explicit appeal to emotions, by telling the audience how to feel, is seldom successful. Instead, the speaker or writer must use words to create or re-create perceptions in which emotions arise naturally. Aristotle realized that words in a speech have not only intellectual meaning, but also have emotional effect. The emotional effect created by words used in an Argument is Pathos.

C. LOGOS. The Greek word "Logos" has a rich background in the history of ancient philosophy. As used by Aristotle in RHETORIC, "Logos" is an argument that persuades through reasoning, often sequential steps, and often arguing from Premises to Conclusions. Aristotle's view of the reasoning process was influenced by the method of reasoning that had been successfully developed in Greek geometry and Greek mathematics. To Aristotle, the typical structure for arguments that appeal to Logos is the Syllogism and the Enthymeme.

1. Syllogism. A Syllogism is a three-pronged deductive argument with two overlapping Premises that lead with certainty to a Conclusion. If the two Premises are proven, then the Conclusion necessarily follows. See Section VII.A.1, 2 & 3 of this Article.

2. Implication. An Implication (sometimes called a "Conditional Proposition") is a relationship between two things, such that if one thing is the case then necessarily a particular related thing also is the case. The following proposition is an Implication: "If P is true then Q is also true." The truth of Q can be established in two ways: by direct proof that Q is true, and by showing that P is true, and that Q follows from P. See Section VII.A.4. of this Article.

3. Enthymeme. In Aristotle's writing on Deductive Logic, an Enthymeme was described as a truncated Syllogism or truncated Conditional Proposition in which part or all of one or more of the Premises or Conclusion is not explicitly

stated. It usually has the form of the Conclusion coupled with a reason (typically the Major Premise).[6] Unlike pure deductive arguments, Enthymemes are not required to lead to the Conclusion with absolute certainty. In Aristotle's RHETORIC, however, where he focuses on persuasive techniques other than Logic, the term Enthymeme had a different meaning. In Rhetoric, an Enthymeme is an argument in syllogistic form that has as its Premise a belief or value that the writer or speaker thinks is shared by the audience.[7] By wisely selecting beliefs or values shared by the audience, as the Premise for an Argument, a speaker can more readily use the Argument to persuade an audience to accept the arguer's Conclusion. These shared beliefs or values are sometimes called "Commonplaces." Aristotle made clear that rhetorical Enthymemes appeal to the rational, not the emotional, part of the audience. But Enthymemes substitute a kind of Informal Logic for the formal Deductive Logic developed elsewhere by Aristotle.[8]

(a) Advantages and Disadvantages of Commonplaces. Using Premises that the audience will accept without preliminary justification (i.e., Commonplaces) avoids the difficulties of proving that the Premises are true. This allows the speaker to move directly into the argument phase in which s/he attempts to persuade the audience that the Premises of the Argument lead to the Conclusion. Because many Commonplaces that might be used in an Enthymeme are (i) ill-defined, (ii) true only to a degree or depending on circumstances, (iii) contradict other beliefs or feelings held by the audience, or (iv) may have different effects on different audiences, the process of constructing and winning arguments using Commonplaces does not have the clarity of valid Deductive Logic (where true Premises lead by necessity to a correct Conclusion), or even valid Inductive Logic (where a sufficient number of well-chosen particulars support a general principle to an acceptable degree of likelihood).[9]

(b) Selection of Commonplaces. An important and interesting part of Aristotle's writing on Enthymemes relates to the "places" (in Greek *topoi)* where a speaker can go to find Commonplaces to use in an argument.[10] The 300-400 enthymatic topics suggested by Aristotle in his books TOPICS and RHETORIC are only partially relevant for the present time, but recent publications have modernized Aristotle's topics[11] and the Internet gives topic-hunters a limitless number of opportunities to find Commonplaces for Enthymemes. You can search for current events, jokes, quotations, proverbs, maxims,[12] adages,[13] aphorisms, gnomes,[14] paroemia,[15] sententia,[16] quotations from famous persons, and even for lists of enthymatic structures and topics.[17] In legal arguments, the Commonplaces include legal principles, legal rules, legal maxims, court decisions that have become symbolic (e.g., *Brown v. Board of Education*, *Miranda*, *Roe v. Wade*, etc.), iconic documents (e.g., the Declaration of Independence, the Federalist Papers, the U.S. Constitution, the Emancipation Proclamation, King's letter from Birmingham jail, etc.); the list goes on. A list of legal Commonplaces is set out in Section XXIII.C of *The Role of Reasoning and Persuasion in the Legal Process*.

VI. ARGUMENT MODELS (OVERVIEW).

For over two thousand years, the reasoning used to describe Argumentation was limited to the three traditional forms of Logic: deductive, inductive, and analogical. In the last sixty years, theorists have developed models of Argumentation that are more closely patterned after the way people think, speak, and act, in psychological experiments and in their everyday lives, patterns that do not fit well into the triad of deductive, inductive, and analogical logic. Of the many Argument Models that have been proposed, five will be examined in this Article: Logic-based Arguments, Defeasible Arguments, the Toulmin Argumentation Model, Fallacious Arguments, and Argumentation Schemes. This Section presents these five Argument Models in overview. Each Model will be taken up in greater detail later in the Article. A common feature of all these models is the idea that, when called upon do to so, we must justify our conclusions by offering reasons to support them. This is the essence of argumentation.

A. LOGIC-BASED ARGUMENTS. Some Arguments achieve persuasive effect through the use of Logic. Whether to use Logic, and the type of Logic to use, in a particular Argument depends upon the problem to be addressed, the evidence available, and the dispositions of the speaker/writer and the audience. The three types of Logic examined in this Article are: Deductive Logic, Inductive Logic, and Reasoning by Analogy.

1. Deductive Logic. As expounded by Aristotle, Deductive Logic is a method of linking certain assumptions to a conclusion in such a way that accepting the assumptions leads to acceptance of the conclusion. Deductive Logic has two main forms: the Syllogism and the Implication. In rough form, a Syllogism is an argument saying that "All Bs belong to Category C; A is a B; therefore, A belongs to Category C." An Implication is a statement that "P implies Q," meaning that an Antecedent "P" is connected to a Consequent "Q" in such a way that if "P" is proven to be true then it necessarily follows that "Q" is true.

Both forms of Deductive logic connote certainty: if the Premises are true, then it logically follows *by necessity* that the Conclusion is true. In most real-world situations, the absolute certainty of Deductive Logic gives way to different degrees of likelihood. In constructing an informal argument, the arguer selects Premises that the audience already believes, or that the audience can easily be persuaded to accept, and then connects these Premises to the desired Conclusion in such a way that the audience is led from its acceptance of the Premises to acceptance of the Conclusion. Traditional Logic requires that Premise(s) lead with absolute certainty to the Conclusion. The Arguments we often make and encounter in our daily lives are patterned after Deductive Logic, but the Arguments are usually not conclusive. The certainty required is just enough to persuade the audience.

In today's world, Implications abound in legal reasoning. Sometimes Implications are explicitly stated, as when jury instructions express evidentiary presumptions by which the proof of one fact allows or requires a certain conclusion. Sometimes Implications are implicit, like the sign in a convenience store that says "We Card Everyone," which means that if you are under 18 years of age then you may not buy tobacco and if your are under 21 years of age then you may not buy alcohol. It can be very helpful to break a legal problem down into its underlying Implications, so that the Antecedents and the Consequents, and the relationships between them, can be critically examined.

Because Implications are so common in the way people talk and think, particularly when deciding whether or not to take or not take a certain action, in order to cause or avoid a certain effect, it can be very effective to construct Arguments in an "if . . . then" format, even if your Claim cannot be proven to a certainty, as Deductive Logic requires. Your Argument then becomes a Defeasible Argument (see Section VIII) presented in deductive form.

2. Inductive Logic. It is often said that Deductive Reasoning moves from the general to the specific, (e.g., from "all men" to "Socrates"), while Inductive Reasoning moves from the specific to the general (e.g., "men we have known" to "all men"). It is also said that Deductive Reasoning draws a Conclusion from things that are already known in the Premises (i.e, if we know that "all men are mortal" then we already know that Socrates is mortal, for he is one of "all men"), while Inductive Reasoning draws a Conclusion about something that is not already known from the Premises. (i.e., until we have seen "all men," we can only project based on the men we know). Inductive Reasoning operates by examining multiple occurrences, then using creativity, or a "hunch," or statistical analysis, or some methodical process of exhausting possibilities, to propose an explanatory or unifying principle to explain these occurrences. This new principle is then stated as a hypothesis that is subjected to testing in order to determine its validity. It is the accepted view that Inductive Reasoning cannot establish conclusions with logical certainty, but only with some degree of likelihood. Since the mid-1600s, Inductive Reasoning has often been expressed in terms of mathematical probability. Some probabilities can

be arrived at using probability theory (like flipping coins or throwing dice), but others can only be reached by statistical analysis of data. Probability theory and statistical analysis have come to predominate discussions of Inductive Reasoning. Statistical data on the outcomes of legal disputes is usually not captured, either at the aggregate level or on a court-by-court or judge-by-judge basis, despite the fact that such information would be useful in predicting outcomes of legal disputes. Statistical analysis has not yet been widely applied to legal decision-making and the extensive work describing Inductive Reasoning in terms of probability and statistics is not yet readily applied to legal issues. But the fundamental approach of Inductive Reasoning can be applied to legal problems, and it is this aspect of Inductive Reasoning that is addressed in Section VII.B. of this Article.

3. Reasoning by Analogy. Reasoning by Analogy is an analytical process that attempts to associate a new item with a familiar item that has already been classified, or that attempts to associate a new problem with a familiar problem that has already been solved. If the new and the old instances are judged to be sufficiently similar, then the classifications or rules that apply to the old item or problem are applied to the new one. This process is applied by a child learning how to use the latest electronic toy to the astronomer classifying a new solar system in a distant galaxy discovered with a more powerful telescope. Some writers have argued that both Deductive and Inductive Logic are, at their core, based on Analogical Reasoning.[18] Reasoning by Analogy is also used whenever a legal dispute does not clearly fall under an existing rule of law, so that the judge must compare the new case to various older cases until s/he finds the closest fit, then uses the rule from the old case to resolve the new one. Reasoning by Analogy also occurs when a Judge is called upon to interpret a vague or ambiguous statutory provision, which may require the Judge to compare the statute in question to other statutes in search of a consistent meaning, or when the court must apply a statute to a fact situation that does not fit clearly within the statute. Professor Edward Levy argued, in his 1949 book *An Introduction to Legal Reasoning*, that all case-based reasoning is Reasoning by Analogy. Reasoning by Analogy is discussed in greater detail in Section VII.C. of this Article.

B. DEFEASIBLE ARGUMENTS. As popularized by American Professor John L. Pollock, the Defeasible Argument Model is a form of Argument that relies on Premises to support Conclusions, just like the Aristotelean Model. In contrast to Aristotelian Logic, however, in the Defeasible Argument Model Conclusions do not have to follow by necessity from the Premises. Instead, Conclusions are defeasible, meaning that they are subject to being revised or abandoned when faced with new information, or superior arguments. In this model, Arguments are subject to "Undercutting Defeaters" or "Rebutting Defeaters." An Undercutting Defeater is additional data or a counterargument that weakens the strength of the Argument, but does not defeat it. A Rebutting Defeater is additional data or a counterargument that negates the support that the original Argument gives to the Conclusion. This Defeasible Argument Model works well with prima facie evidence, and in visualizing the shifting burden of proof that occurs in some trials, and in dealing with legal presumptions, some of which maintain presumptive force despite contrary evidence and some of which lose presumptive force in the face of contrary evidence. Prima facie evidence, presumptions, and burdens of proof, are examine in Section XII.

C. THE TOULMIN ARGUMENTATION MODEL. Stephen E. Toulmin (1922-2009) was a British philosopher and educator who lived the second half of his life in the United States, where his ideas found greater acceptance than in his native England. Toulmin criticized the pursuit of universality in science and philosophy, and instead attempted to conceptualize practical issues in useful ways. Toulmin rejected the logic-oriented approach to Argumentation that emphasized inference from Premises, and instead suggested a more practical conception of Argumentation in which "Claims" are made and then supported through a process of "justification."

Toulmin developed a Model of Argumentation based on six components, three of which were primary (i.e., involved in all arguments) and three of which were secondary (i.e., involved in some but not all arguments). The three primary components of Toulmin's Model are Claims, Evidence and Warrants. The three secondary components of Toulmin's Model are Backing, Rebuttals, and Qualifiers. The Claim is a conclusion whose merit is to be established through the Argument. The Evidence is the data that the proponent relies upon to support the Claim. The Warrant is the means by which the Evidence is connected to the Claim. The Warrant can be logical reasoning, or a scientific principle, or a rule of law, or any other connective device. Some Warrants are strong enough to stand without further support. Where a Warrant does not automatically garner acceptance by the audience, the Warrant must be supported by Backing, or support for the rule(s) contained in the Warrant. Most Claims are subject to Rebuttals, which are counter-arguments that restrict or even defeat the Claim. The last element in the Toulmin Model is the Qualifier (e.g., possibly, probably, certainly, unless), which reflects the degree of force or certainty that the proponent associates with the Claim. The Toulmin Model of Argumentation is discussed more thoroughly in Section IX.

D. FALLACIOUS ARGUMENTS. Fallacious Arguments are Arguments that have been identified over the millenia as being flawed, for one reason or another. Each flawed Argument has been given a name, and has certain characteristics that differentiate it from other Arguments, both good and bad. There are differences of opinion about whether certain Fallacies are truly flawed, and if so why this is so. There is increasing recognition that some Fallacies are bad arguments only in certain circumstances, but not in all circumstances. A more comprehensive analysis of Fallacious Arguments is given in Section X.

E. ARGUMENTATION SCHEMES. The Argumentation Schemes Model has been espoused by a number of argumentation theorists, including Canadian philosophy professor Douglas Walton. In Walton's view, many Arguments tend to fall into categories that have elemental features that remain the same from instance to instance. In his articles and books, Professor Walton has identified the essential elements of many Argumentation Schemes and has identified a set of "Critical Questions" that can be used to test or attack each Argumentation Scheme. The Argumentation Schemes Model provides an easy way to construct or attack an Argument that fits one of these Argumentation Schemes. Argumentation Schemes are examined in Section XI.

VII. LOGICAL REASONING (DETAILED ANALYSIS). In Aristotle's view, to be persuasive a speaker requires three things: credibility (ethos), good reasoning (logos), and effective use of emotion (pathos). This Section of the Article examines the reasoning component, with a close study of three types of reasoning: Deductive Reasoning, Inductive Reasoning, and Analogical Reasoning. Ethos and Logos are discussed in *The Role of Reasoning and Persuasion in the Legal Process*, Section XIV.

A. DEDUCTIVE REASONING. Aristotle's primary model for reasoning was Deductive Logic. The main form of Deductive Logic he called "the Syllogism." A Syllogism consists of two statements, called "Premises," which lead by logical necessity to a third statement, called the "Conclusion." Most Syllogisms include things in, or exclude things from, categories, and so are called "Categorical Syllogisms." While Judges and lawyers seldom explicitly frame legal issues as Syllogisms, it can be helpful to arrange the parts of a legal problem into the form of a Syllogism, so that the logical components of the legal problem are more evident and can be more readily evaluated.

Another form of Deductive Argument is called "Implication." In an Implication the Premise is called "the Antecedent" and the Conclusion is called "the Consequent." The Implication relationship is such that by establishing the Antecedent you thereby establish the Consequent.

1. The Categorical Syllogism. The simple categorical Syllogism consists of three statements, such as:

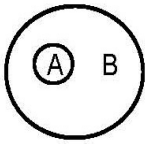
All men are mortal.
Socrates is a man.
Therefore, Socrates is mortal.

The first sentence is the "Major Premise." The Major Premise takes one complete category of things ("all men") stated in the subject of the sentence and includes it in another category of things ("mortal") stated in the predicate of the sentence. The second sentence is the "Minor Premise." The Minor Premise takes an individual ("Socrates") stated in the subject of the sentence, and includes him in the complete category contained in the predicate of the sentence, which is also contained in the subject of the Major Premise ("all men"). The third sentence is the "Conclusion." The subject of the Conclusion is the subject of the Minor Premise. The object of the Conclusion is the object of the Major Premise. The Conclusion necessarily follows from the Major Premise and the Minor Premise. This linkage of two Premises to a Conclusion is the core process of Deductive Reasoning, viewed through the Syllogism model.

Viewed from the perspective of argumentation, the Conclusion is a given and the challenge is to find Premises that the audience will accept so that the Syllogism leads the audience to the desired Conclusion.

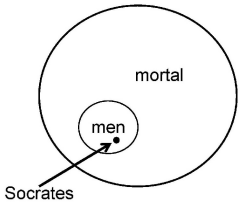
Most everybody can intuitively see the validity of this type of syllogistic reasoning. However, people do not as readily see how the Syllogism works in reverse: that if the Conclusion is false, then one or both of the Premises must be false. That is, if Socrates is not mortal, then either (i) some men must not be mortal, or (ii) Socrates must not be a man, or (iii) both.

a. Graphically Depicting the Simple Categorical Syllogism. In 1768, the Swiss mathematician Leonhard Euler developed a simple way to depict the Categorical Syllogism, called "Euler Circles." With Euler Circles, a classification is represented by a circle. All instances of that classification fall within that circle. Anything outside of the circle does not meet the classification. The proposition that "All As are Bs" is depicted:



In the foregoing Euler Circles, since all As are Bs, the circle of all As is totally inside the circle of all Bs.

The Socrates Syllogism, depicted with Euler Circles looks like this:

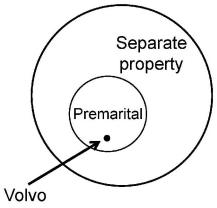


These Euler Circles show that if all men are mortal, and Socrates is a man, then Socrates must be mortal.

b. A Legal Dispute as a Simple Syllogism. Here is an example of the simple categorical Syllogism applied to a family law problem:

All premarital assets are separate property.
Wife owned the Volvo prior to marriage.
Therefore, the Volvo is Wife's separate property.

The Major Premise states the rule of law that premarital assets are separate property. The Minor Premise states the fact that Wife owned the Volvo prior to marriage. It necessarily follows, therefore, that the Volvo is Wife's separate property. Depicted as Euler Circles, the Syllogism looks like this:



c. Disputed Facts; Disputed Law. In some cases, the parties agree as to what rule of law applies to the legal dispute, and the fight is over whether the facts of the case bring it within that rule of law. This can be seen as a Simple Categorical Syllogism, where the Major Premise is the rule of law that applies, and the Minor Premise is the factual determination of whether the case falls within that rule of law. If so, then the Conclusion necessarily follows. The foregoing example would be: premarital assets are separate property; the Volvo is a premarital asset; therefore, the Volvo is separate property.

In other cases, there may be a dispute over what rule of law applies to the case. In such a situation, the outcome of the case depends not only on the facts, but also on the rule of law that is chosen to apply to the facts. To resolve the case, the court must decide which rule of law applies (thereby establishing the Major Premise), and the fact-finder must decide whether the case comes within the scope of that rule (thereby establishing the Minor Premise), thus leading to the Conclusion.

2. The Hypothetical Syllogism. In an Hypothetical Syllogism, the first Premise presents a choice which must be resolved by the second Premise in order to reach the Conclusion. There are three kinds of Hypothetical Syllogisms: Conditional; Conjunctive; and Disjunctive.

a. The Conditional Syllogism. A Conditional Syllogism takes the form: "if P implies Q and Q implies R, then P implies R".

b. The Conjunctive Syllogism. A Conjunctive Syllogism contains a compound Major Premise in the form of a Conjunctive Proposition that is denied. The Minor Premise of the Syllogism then either affirms or denies one of the conjunctive terms. Example:

A and Not-A cannot both be true.
Not-A is true.
Therefore, A must be false.

c. The Disjunctive Syllogism. The Major Premise of a Disjunctive Syllogism presents two or more alternatives from which to choose, only one of which can be true. (This is the Exclusive Disjunctive, discussed in *The Role of Reasoning and Persuasion in the Legal Process*, Section VII.F.3). The Minor Premise then either chooses one of the alternatives, or rejects all alternatives except one. Example:

A or B. A or B or C.
A. or Not-B.
Therefore, not-B. Therefore, A.

In the foregoing example, "A" and "B" must be mutually exclusive or the Disjunctive Syllogism is Unsound (i.e., it has a false Premise). Another example:

A or B or C or D.
Not-A.
Not-B.
Not-C.
Therefore, D.

The foregoing example shows proof by "process of elimination." Another example:

Either it is night or it is day.
It is not night.
Therefore, it is day.

The foregoing Syllogism raises the problem of gradations (i.e., when does night become day?) See *The Role of Reasoning and Persuasion in the Legal Process*, Section XIX. Also, see the Argument Scheme for the Disjunctive Syllogism, at Section XI.B.1.b.

3. The Dilemma. In Logic, a Dilemma is a Proposition in which two options lead to the same Conclusion. A Dilemma is symbolized as follows:

A or B.
A implies C.
B implies C.
Therefore, C.

A Dilemma in ordinary speech has a different meaning. It means the necessity of choosing

between two or more different options, each of which leads to a disagreeable outcome.

A dilemma was depicted in Catch-22. "In Joseph Heller's novel of this title, American pilots in the second World War learned that they could not avoid flying bombing missions unless they were crazy; to be relieved from duty, they had to request a reprieve. The 'catch-22' was that the very act of seeking to avoid hazardous combat duty demonstrated a pilot's sanity, thereby ensuring a denial of the request."

4. Implication. Another way to view Deductive Reasoning is through a logic relationship called "Implication." More so than syllogistic reasoning, Implication follows the way people analyze problems in the real world. In Logic, "implication" means that one thing necessarily establishes another thing, while in natural language "implication" sometimes connotes certainty and sometimes connotes that another thing is probably true. If we say that "X" is an event or condition, everyday reasoning is concerned not just with things that *certainly* follow from X but also with things that *probably* follow from X and things that *possibly* follow from X. Because the natural language arguments we encounter in daily life involve not only certainties but also probabilities and sometimes just possibilities, in this Article the word "Implication" may mean different degrees of likelihood.

a. Antecedent/Consequent. Implications are called Hypothetical Propositions, as distinguished from the Categorical Propositions discussed above in connection with Syllogisms. Hypothetical Propositions, sometimes called "Conditional Propositions" or "Conditionals," express a relation between Terms, where the truth of one Term is dependent upon the truth of another Term. The Term that depends on the other Term is called the "Consequent." The Term on which the Consequent depends is called the "Antecedent." In a Conditional Proposition, the Antecedent is often symbolized as "P" and the Consequent is often symbolized as "Q". An Implication is often stated: "P implies Q", or "if P then Q", or "P, therefore Q". In Symbolic Logic, an Implication is stated: "P ⊃ Q" or "P → Q".

To express the classical Syllogism in terms of a Conditional Statement, one would say that, if the Major Premise and the Minor Premise are both true, then the Conclusion must be true. The Major Premise and the Minor Premise taken together thus become the Antecedent "P", and the Conclusion becomes the Consequent "Q". Stated differently, a Syllogism, expressed as a Conditional, would take the form "if A and B are true, then C is true." Example: "If all men are mortal and Socrates is a man, then Socrates is mortal".

In modern natural language, people use Conditionals as opposed to Syllogisms, so Deductive Reasoning today is more accurately represented by Conditionals and not Syllogisms.

b. Two Rules of Implication and Three Points to Remember. There are two rules to remember about the logical Implication relationship "P implies Q" when used in Logic.

Rule # 1: Whenever "P" is true, then "Q" must also be true. In this instance, the Implication is logically Valid. If ever it occurs that "P" is true when "Q" is false, then the logical Implication is said to be logically "Invalid." In generic terms, Rule 1 is called a "Statement."

Rule # 2: The second fundamental rule of logical Implication is that, if "P implies Q", then proving that "Q" is false establishes that "P" is also false, or that "not-Q implies not-P". Example: "If it is raining, then the sidewalk is wet; the sidewalk is not wet; therefore it must not be raining". Rule 2 is called the "Contrapositive." If a Conditional Statement is true, then its Contrapositive is also true, without exception.

Point to Remember #1: just because "P" is false does not, of itself, establish that "Q" is false. In other words, the fact that "P implies Q" does not suggest the "Inverse", that "not-P implies not-Q". Example: "If it is raining, then the sidewalk is wet; it is not raining; therefore, the sidewalk must be dry." This is Invalid reasoning, since even if

the sidewalk is not wet from rain, it could be wet for other reasons, for example if the woman next door was watering her roses.

Point to Remember #2: the fact that "P implies Q" does not establish the "Converse", that "Q implies P." Example: "If it is raining, then the sidewalk is wet". That Implication does not mean that if the sidewalk is wet it therefore must be raining. The sidewalk could be wet for another reason, such as the neighbor watering her roses.

Point to Remember #3: an Implication can either affirm the Term in the predicate of the sentence, or it can negate the Term in the predicate. In other words, an Implication can suggest that "P implies Q" or it can suggest the Contradiction that "P implies not-Q".

In Deductive Reasoning, "P" and "Q" can have five different forms, some of which are logically valid and some of which are not. These five forms are:

(1) Statement P implies Q
(2) Converse Q implies P
(3) Inverse Not-P implies not-Q
(4) Contrapositive Not-Q implies not-P
(5) Contradiction P implies not-Q

In Deductive Reasoning, if we know that (1) is true, then we also know that (4) is true and (5) is false, but we do not know whether (2) and (3) are true or false. Psychological studies suggest that, of the two rules of Implication, most everybody understands (1), but only about 20% get that (1) also means (4).

Stated differently, if the Implication "P implies Q" is Valid, then (i) affirming the Antecedent affirms the Consequent, (ii) denying the Antecedent says nothing about the Consequent, (iii) affirming the Consequent says nothing about the Antecedent, (iv) denying the Consequent disproves the Antecedent, and (v) suggesting that "P implies not-Q" is wrong because it contradicts the Implication that we know is Valid. If you deny the Antecedent, then the Implication is "Unsound" (meaning that the Implication is based on a false Antecedent) and the Implication is therefore Invalid.

It bears repeating that, in Logic, the Implication relationship is certain, meaning that when "P implies Q" is true then the existence of "P" establishes with certainty the existence of "Q." In many natural language arguments, however, instead of certainty an Implication may only be probable, or even just possible.

c. Affirming the Antecedent (Modus Ponens). *Modus ponendo ponens* (in English, "the way that affirms by affirming") is a particular form of Conditional Proposition. Modus Ponens is central to Logic, and to everyday reasoning. Modus Ponens is a rule of inference that takes the form: "if P is true, then Q is true; P is shown to be true; therefore Q must be true". Stated differently:

(1) P implies Q.
(2) P.
(3) Therefore, Q.

The foregoing Proposition, stated symbolically, is: "$P \supset Q; P; \therefore Q$", where "$\supset$" signifies Implication[19] and "$\therefore$" signifies "therefore".

Modus Ponens is also called Affirming the Antecedent. A Proposition presented in Modus Ponens form is the essence of Deductive Reasoning. The Modus Ponens has two Premises: the first is that the Implication "$P \supset Q$" is true, and the second is that "P" is true. In Modus Ponens, given the truth of those two Premises, it necessarily follows that the Conclusion "Q" is true.

d. Denying the Consequent (Modus Tollens). *Modus tollendo tollens* (in English, "the way that denies by denying") is another form of Conditional Proposition. Modus Tollens is the Contrapositive inference, called "Denying the Consequent," where proving that the Consequent is false establishes that the Antecedent is also false. It takes the form: "If P is true, then Q is true; Q is shown to be false; therefore, P is false". Stated differently:

(1) P implies Q.

(2) Not−Q.
(3) Therefore, not−P.

Stated symbolically: "P ⊃ Q; ¬ Q; ∴ ¬ P", where the logic symbol" ¬" stand for Negation and the logic symbol "∴" stands for the English word "therefore." This inference is also called the Law of Contraposition. Example: "If it rains, then the sidewalk will be wet; the sidewalk is dry; therefore, it has not rained". The Modus Tollens form can be constructed by taking the negation of the Consequent and making it the Antecedent of a Conditional, and making the negation of the Antecedent the Consequent of the new Conditional.

Note that proving that the Consequent is false in Modus Tollens fashion does not disprove the Validity of the Implication relationship. Rather, Modus Tollens relies upon the validity of the Implication relationship to show that when the Consequent is false then denying the Consequent the Antecedent is false. Stated differently, every Implication carries with it the necessary fact that when the Consequent is false, the Antecedent is also false.

e. Chaining Conditional Propositions. When Conditional Propositions are linked together in a chain, they are called a "Sorites." In a Sorites, the Consequent of the preceding Conditional is the Antecedent of the next.

Example:

1.

If A then B.
If B, then C.
If C, then D.
If D, then E.
Therefore, if A, then E.

The example restated:

P implies Q.
Q implies R.
R implies S.
S implies T.
P.
Therefore, T.

Stated in symbolic form:

P ⊃ Q ⊃ R ⊃ S ⊃ T; P; ∴ T.

The foregoing example is called "Chain Reasoning."

A Chain of Reasoning can also involve the Contrapositive.

Example:

P implies Q.
Q implies R.
R implies S.
S implies T.
Not-T.
Therefore, not-P.

In argumentation, a Contrapositive Chain of Reasoning is sometimes called "Reductio ad Absurdum" (reduction to absurdity), where the purpose of the argument is to show that the original Premise (i.e. the Antecedent) must be false because it leads to a false conclusion (i.e. Consequent). *See* Section XI.B.1.g.

f. Enthymemes. In speaking or writing, people often state arguments in the form of a Syllogism, while omitting one of the two Premises, or the Conclusion. In his works on Logic, Aristotle called such an incomplete Syllogism an "Enthymeme". Example:

All arguments missing a premise are enthymemes.
2. Therefore, this argument is an enthymeme.

In the foregoing example, the Syllogism is missing its Minor Premise: "This argument is missing a premise."

Since an Enthymeme can be a Syllogism that is missing either the Major Premise, the Minor Premise, or the Conclusion, to see the logic of such an Enthymeme it is sometimes necessary to "expand" the Enthymeme into a Syllogism by supplying the missing part(s). Expanding the Enthymeme allows the Proposition to be more

easily evaluated using the rules of Syllogisms. This can be an important exercise because, when one of the parts of a Syllogism is implicit, the asserted Proposition is more readily assumed to be Valid when it is not, or the possibility that an Argument is Unsound (i.e. containing a Premise that is false) is more likely to be overlooked, or a Syllogistic Fallacy might be missed. Rules for expanding Enthymemes are discussed in *The Role of Reasoning and Persuasion in the Legal Process*, Section VII.B.11.

Enthymemes have another feature that distinguishes them from Syllogisms: Enthymemes do not have to arrive at Conclusions that are certain; they may arrive at Conclusions that are possible or probable. A Logic Proposition that has a Major Premise, Minor Premise, and Conclusion, but the Conclusion is only possible or probable rather than certain, is an Enthymeme.

Aristotle wrote that Enthymemes are frequently used in public speaking, and he covered the topic in detail in his book on Rhetoric. See *The Role of Reasoning and Persuasion in the Legal Process*, Section XIV.C.2. than he did in his books on Logic. Many believe that Aristotle used the word Enthymemes differently in THE RHETORIC.

g. Proof by Contradiction. Proof by Contradiction is an indirect method of proof that establishes that the Premise of an Argument is true by assuming the Negation of the Premise and showing that this assumption leads to a logical contradiction.[20] The rules of Logic say that, if a Premise (or hypothetical assumption) leads to a logical contradiction, then the Premise (or assumption) is proved to be wrong. If the negation of the Premise is proved wrong, then the affirmative of the Premise must be true. Indirect Proof is expressed in Symbolic Logic as "((¬A ⊃ B) /\ (¬A ⊃ ¬B)) ⊃ A", which says that "if not-A implies B and not-A implies not-B, then A". Indirect Proof is a form of "Reductio ad Absurdum" (reduction to absurdity). See Section XI.B.1.f & g.

h. Proof by Contrapositive. Proof by Contrapositive is another indirect method of proof that establishes the Validity of a Deductive Inference by proving the Contrapositive, that is, by proving that the negation of the Consequent always establishes the negation of the Antecedent (not-Q implies not-P). In Deductive Logic, the Contrapositive of a Logical Inference is the Logical Equivalent of that Inference. So proving the Validity of the Contrapositive is logically the same as proving the Validity of the underlying Inference.

i. Disproof by Counterexample. A counterexample is a method of refuting a claim that a principle or rule[21] applies to certain situations. In formal Logic, a counterexample disproves the Validity of a logical inference when it shows that the Premises can be true when the Conclusion is not. In non-technical arguments, a counterexample applies the proposed principle or rule to a hypothesized situation where it has an illogical or undesirable consequence. A counterexample is a form of Reductio ad Absurdum Argument. If the claim is that a principle or rule applies to *all* instances, a single counterexample disproves the claim. If a claim is that a principle or rule applies to *some* instances, a counterexample disproves the claim only if the counterexample falls within the area included in the Argument. A proponent who is faced with a counterexample can challenge the applicability of the counterexample, or can admit the counterexample as an exception to the principle or rule, or can restate the proposed principle or rule more narrowly, so as to exclude the counterexample. One school of thought among cognitive psychologists is that people determine the validity of an inference, not by grinding through a Syllogism or Modus Ponens Proposition, but rather by quickly searching their minds for counterexamples: if they find one, the inference is deemed Invalid; if they find none, then the inference is deemed Valid.[22]

j. Attacking a Conditional Proposition. The Conditional that "P implies Q" is used to prove "Q" by proving "P". The Conditional can be attacked in three ways: (i) by disproving "P", which means the Implication relationship does not apply so that the truth of Q is not proven; (ii) by proving that the Implication is Invalid by showing at least one instance when "P" is true and "Q" is

false; and (iii) by directly disproving "Q" using extrinsic evidence. The first attack establishes that the Implication is Unsound[23], but it does not establish whether "Q" is true or false, nor does it prove that the Implication is Invalid. It merely establishes that the Implication does not apply to the facts in question. The second attack disproves the asserted implication relation between "P" and "Q", but it doesn't establish whether "P" or "Q" are true or false. The third attack negates the Consequent (which under Modus Tollens would negate the Antecedent) but does not prove that the Implication relationship itself is Invalid.

k. Refuting a Deductive Argument. A Deductive Argument proceeds from Premises to a Conclusion, or from Antecedent to Consequent. A Conditional Deductive Argument (in Modus Ponens form) assumes that the Implication relation is Valid and proves that the Consequent is true by proving that the Antecedent is true. A Conditional Deductive Argument (in Modus Tollens form) assumes that the Implication relationship is Valid and proves that the Antecedent is false by proving that the Consequent is false. To refute a Deductive Argument, an opponent can (i) attack the Validity of the Implication that connects the Premise/Antecedent to the Conclusion/ Consequent; (ii) attack the Premise/Antecedent, or (iii) attack the truth of the Conclusion/Consequent (which by the way, disproves the Premise/ Antecedent, if the Implication is Valid).

l. Refuting an Argument for Change. Imagine that a person is trying to gain support for a change by asserting that a certain new state of affairs would be desirable, and that making a proposed change now would bring the desirable state of affairs into being. To attack this argument, you can: (i) establish that the change will not necessarily lead to the predicted state of affairs (i.e. attack the validity of the Implication); (ii) establish that the proposed change is not possible (i.e., negating the Antecedent); or (iii) establish that the new state of affairs envisioned by the proponent would not be desirable (i.e., negating the Consequent).

m. Refuting an Argument Over Trust Income. Imagine that a family lawyer is arguing that distributions of income from a testamentary trust to a married beneficiary are community property, and that the money in a particular account was distributed during marriage from a testamentary trust, ergo the funds must be community property. This is a Syllogistic argument. You can attack the argument by: (i) arguing that distributions of income from a testamentary trust are not community property (thus disproving the Major Premise); (ii) showing that the distribution was of trust principal, not income (thus disproving the Minor Premise); or (iii) showing that–even conceding the two premises--the funds are nonetheless separate property for some exceptional reason that overrides the deductive argument, such as a premarital agreement saying that distributions from the trust are separate property, or because the trust was set up as an of interspousal gift, or some other supervening argument.

B. INDUCTIVE REASONING. Since Inductive Logic starts with Premises and ends with a Conclusion, inductive arguments have features that exist for Deductive Logic, except for the certainty in outcome. Looked at syllogistically, Inductive Logic involves inferring the truth of the Major Premise of a Syllogism of which the Minor Premise is assumed to be true and the Conclusion is proved to be true.[24]

1. Generalization. A key aspect of Inductive Logic is generalization. There are two types of generalization: Anecdotal Generalization and Statistical Generalization. Anecdotal Generalization proceeds from anecdotes, which are informal accounts of events that cannot be investigated using the scientific method. Anecdotal evidence is not necessarily typical, so the risk is great that someone will make an unwarranted assumption that the anecdote is representative of the general case. This is called the Fallacy of Hasty Generalization (see Section X.B.1). A Statistical Generalization is a generalization that attributes to a larger group a property that exists in a representative sample of the target population, typically expressed as a percentage.[25]

2. Simple Induction. Simple induction involves inferring generalized knowledge from example

observations. Stated differently, induction is deriving a general rule from background knowledge and observations. Example:

Socrates is a man.
Socrates is mortal.
Therefore, I hypothesize that all men are mortal.

If induction is used to generate a hypothesis, and that hypothesis is confirmed as true, it can become a Major Premise to use in Deductive Logic (like "all men are mortal"). Some writers have argued that all Major Premises used in Syllogisms are inductive generalizations.

3. Correlation and Causation. An important part of Inductive Logic is to identify causes, whether of events, or conditions, or diseases, or anything else. A major problem in Inductive Logic is thinking that things that correlate have a causal relationship. Consequently, a dictum has developed that "correlation does not imply causation," meaning that correlation may suggest a causal relationship but it does not prove it. Plus, in a pair, determining which is the cause and which is the effect can be challenging, and sometimes the causal relationship can be interactive, with each item partially causing the other. Two things may correlate because they are both responding to a third cause. See Section XI.B.6.

4. Statistical Syllogism. A Statistical Syllogism is a Syllogism that does not assert the Conclusion with certainty. A Statistical Syllogism reasons from a generalization that is for the most part true in a particular case. This contrasts with Induction, which reasons from particular cases to generalizations. Statistical Syllogisms may use qualifying words like "most", "frequently", "almost never", "rarely", etc., or may have a statistical generalization as one or both of their premises. A Statistical Syllogism has the form: "This is an A and the probability of an A being a B is high, so this is probably also a B."[26]

5. Statistical Prediction. Statistical prediction is predicting outcomes based on broad statistics and not on individual assessment of a specific situation. In 1954, American clinical psychologist Paul Meehl championed the idea that the course of mental illness could be better predicted using general statistics than clinical evaluation of the individual patient.[27]

6. The Counting Marbles Example. A simplified example shows how inductive reasoning with statistics works. Say you have a can with 100 marbles inside, some white, some black, but the number that are white and the number that are black are unknown and must be determined. If one marble is removed and examined, and it turns out to be black, that shows for certain that some of the marbles are black, but how many scannot be said. If we pull 50 marbles from the can and calculate percentages, we would have a much better idea of the overall split between white and black. As we pull an increasing number of marbles from the can, if we revise our calculations our accuracy rate will increase until the 100th marble is inspected and our allocation can be made with certainty. What if we have 10,000 marbles in a bin? There is not time and money enough to examine all 10,000 marbles, so we use a sampling technique. If 100 marbles are removed and they are all black, that would suggest that all the marbles in the bin are black. However, that generalization is safe only if the 100 marbles were randomly selected. If they are all taken from the top of the pile, and we later learn that 6,000 white marbles were put in the bottom of the bin and 4,000 black marbles were laid on top, then our sample would not be representative and we would be mistaken in our generalization that all the marbles in the bin are black. This example shows the necessity of sampling for large databases, and the dangers of making generalizations about a population based on samples that are not random.

7. Counterexamples in Inductive Reasoning. A counterexample to a generalization is a single instance that contradicts the generalization, such as the discovery of black swans in Australia, which refuted the widely-held view (i.e., inductive conclusion) that all swans are white.[28] A single counterexample does not disprove a generalization that claims less than 100% applicability, or claims applicability less than 100% of the time.

8. Cognitive Studies of Inductive Reasoning. In recent years, psychologists have been studying the way people engage in inductive reasoning. Interesting conclusions are developing from these studies. In one experiment, examiners were asked to rate an argument that a drug was safe, based on clinical trials that showed no negative side-effects. The examinees rated the conclusion based on one drug study to be weaker than the same conclusion based on 50 clinical trials.[29]

Neuro-scientists have begin to study the physical manifestations of different types of logical thinking using brain imaging tools like the functional MRI. The process is called "neuro-imaging." Studies are showing that performing different types of tasks using inductive logic involves different parts of the brain. It is possible that eventually science will help rhetoricians to refine their theories or develop new ones based on a more accurate understanding of the way the brain works.

9. Generating Rules to Resolve Legal Cases. In many legal disputes, the law to be applied is not contested. The only issue is how the legal rule applies to the facts of the case. However, in some instances there is a dispute as to which rule of law applies to a case. This occurs when the facts make a case uniquely different from earlier cases or when, in a developing area of the law, the controlling legal principles have not yet been firmly established. In that situation, it is necessary for a judge or lawyer to use legal reasoning to determine the rule of law to be applied. The first and most frequent approach is to look at prior cases involving similar issues and argue for or against applying the rule of law of an earlier case to the current case, based on similarities and distinctions between the two cases. If there are no prior cases that are sufficiently similar to copy, then the second approach is to look at prior cases in other areas of the law, to see if an underlying rule of law can be discerned that could be used to resolve the case at hand. If the comparison is to be made to rules of law in other areas (rather than specific cases), then the goal is to see if these different rules can be unified as expressions of a more fundamental underlying principle of law that can be applied to the current case. If this is not possible, then as a third alternative the lawyers and judges must fall back on general principles of law, to fashion from them a particular application that can be applied to the case at hand.

The first method mentioned above, of case-to-case comparison, has been identified as Reasoning by Analogy. John Stuart Mill considered Reasoning by Analogy to be a form of inductive reasoning. Others have argued that Reasoning by Analogy goes from the specific to the specific, rather than from the specific to the general, and thus is not really inductive. In this Article, Reasoning by Analogy is discussed separately, in Section VII.C.

The second approach described above, of abstracting underlying rules of law from the analysis of cases, is a form of Inductive Logic epitomized by the American Law Institute's process of developing its Restatements of the Law, which gathered and organized court decisions from many jurisdictions, and synthesized them into general rules of law. Where the synthesis is among existing rules of law, one such inductive effort was aptly described in the British case of *Heaven v. Pender*, 11 Q.B.D. 503 (1883): "The logic of inductive reasoning requires that where two major propositions lead to exactly similar minor premises there must be a more remote and larger premise which embraces both of the major propositions."

The third approach is a blend of inductive and deductive reasoning, in that inductive reasoning is needed to canvas general principles to find likely candidates for the rule to be applied in the case, but the decision of which principles, or combination of general principles, to apply may be based on familiar deductive techniques like Modus Ponens, Modus Tollens, Reductio ad Absurdum, and the like.

C. REASONING BY ANALOGY. Although Reasoning by Analogy has been written about far less than either Deductive Reasoning or Inductive Reasoning, arguably Reasoning by Analogy is the most pervasive of the three. At its simplest level, Reasoning by Analogy is the process of comparing two things in order to determine whether they

are sufficiently similar that they should be treated the same way. Many people analyze a new problem by comparing it to a personal inventory of memories or mental models that they have accumulated through study or experience. Some cognitive psychologists say that the reasoner retrieves the mental model from long term memory into working memory where the mental model can be juxtaposed to the new problem to see if a solution is suggested. Logic purists disparage Analogical Reasoning as not being logical; on the other hand, some researchers and some philosophers see Deductive Logic and Inductive Logic as being analogical at their core.[30] Argument by Analogy attempts to persuade the audience that a proposition being considered is sufficiently similar to something old and familiar that the new thing should be viewed in the same way as the old.

Analogies are pervasive in society. When someone argues that the current war in Afghanistan is like the war in Vietnam, they are attempting to associate the unpopularity of the old war with the new war. A company sells cookies "like grandmother used to make." People use Analogical Reasoning and make Analogical Arguments constantly. In speech, people say that X is like Y. That figure of speech, called a "simile," is a form of analogy. Analogical Reasoning operates among consumers, who expect the next tube of Crest toothpaste to taste the same as the last. A traveler who books a room at an unfamiliar Embassy Suites expects that s/he will find a room with a couch, bed, table and wet bar connected to a room with a bed and a bathroom.

Analogical Reasoning is prevalent in American law, with its emphasis on case law precedent.[31] Adversaries fight over whether the decision in a new case should be guided by or even controlled by a prior decision in an older case. Appellate justices often justify their decisions by pointing to earlier cases where the controlling factors were already worked through by another court. Sometimes analogies can influence the course of development of the law, like the "wall of separation" between church and state, or the "marketplace of ideas" in First Amendment law, or the personification of corporations as individuals.

While Analogical Reasoning is by definition the making of comparisons between two items, there are different levels of sophistication for the comparison. At the simple end of the spectrum is "associative reasoning," where things are matched based on simple connection, like a sailor can be associated with a ship. Another level of Analogical Reasoning is based on matching surface similarities, such as shape, or color, or when a ship is matched to another ship or when a man is not matched to a woman. A higher level of abstraction occurs when relational features are used as the basis of comparison. For example, one analogy test paired a train to train tracks, and then offered a ship to be paired with (i) a sailor, (ii) water, (iii) a car, and (iv) a different ship. Associative reasoning might pair the ship to the sailor, and no one could argue that the association is wrong, for sailors do sail ships. The matching of surface similarities might pair the ship to the other ship, and no one could argue that the association is wrong, because in fact they both are made of wood, they both have sails, etc. Relational reasoning, however, would pair the ship to the water, because the key connection between the train and the train tracks is that the train travels along the tracks, like the ship travels through the water. Yet another right answer, but the level of sophistication of the relational reasoning is plainly higher than for the associative reasoning or the comparison of surface features.[32]A higher level still is comparisons based upon the relationships between relationships.

But an even higher and more important level of abstraction is possible with Analogical Reasoning. As a person accumulates a store of analogies, through education or through actual life experiences, the process of Analogical Reasoning slowly changes, from the comparison between a new item and a familiar one, to the comparison of the new item to a body of knowledge involving many prior analogies. Viewed over time, Analogical Reasoning is a three-tiered process: the lowest level is generating an "analogical generalization" that bridges between the two items in a specific situa-

tion; the middle level is "inductive refinement" through which the analogical generalization is refined into a newer and better conceptualization; the top level is "abstract generalization" where the process of Reasoning from Analogy generates general principles that can be applied to a variety of comparisons in a variety of Domains.[33] This process is akin to the process of reasoning from many specific instances to a generalization that is characteristic of Inductive Reasoning, only without Inductive Reasoning's emphasis on probabilities or statistical analysis. Such an analogy-generated generalization, if it survives the test of time, could even end up becoming the Major Premise of a Syllogism. This suggests why some theorists can say that, at their core, both Deductive Reasoning and Inductive Reasoning are based on Analogical Reasoning.

The value of analogies was summed up by one writer in this way:

> We use analogies, therefore, because they are helpful. They assist us in making decisions, they help us to persuade others of the correctness of our decisions, and they illuminate aspects of a current situation that may otherwise have been obscured. And at their best they enable us to identify or construct generalizations that connect the source and the target, thereby facilitating the development of new theories that in turn might help in predicting future events.[34]

1. Terms of Analogical Reasoning. In Analogical Reasoning, the old and familiar term is called the Source, or the Analog. The new and unfamiliar item is called the Target. The points of comparison between the Source and the Target are sometimes called objects, or features, or items, or material resemblances, or relevant comparisons, or relationships, or relationships among relationships, or some similar term.

In developing an analogy, features of the Source are compared to features of the Target in a process called Mapping. When a sufficient number of features have been successfully Mapped between the Source and the Target, the reasoner can safely infer that other features of the Source have counterparts in the Target. This "mental leap" is called Transfer or Projection. In more abstract comparisons, it is relational features and not the surface similarities that are projected from the Source to the Target.

The Source and the Target each exist in a context, called a Domain. Two items that are "in domain" can more readily be compared than two items that are "cross domain."[35] An example is laboratory testing of a new product on animals. The new product is tested on rats, or perhaps dogs or baboons. The results are then projected on humans. This instance of Reasoning by Analogy crosses Domains, from the animal Domain to the human Domain. When product testing progresses to tests on humans, the projection that is made, from the humans who are in the study to the general population, occurs "in domain"–the human Domain.

A direct analogy compares features of the Source to features of the Target, such as shape, size, color, number, etc. A proportional analogy projects relational features of the Source onto the Target, as in the analogy "Paris is to France as Stockholm is to what?; or stated more abstractly "A is to B as C is to X"; or stated symbolically "(a : b : : c : x)."[36]

2. Comparing Deductive, Inductive and Analogical Reasoning. Deductive Syllogistic Reasoning couples a general rule with a specific instance to demonstrate that the specific instance falls under the general rule. Inductive Reasoning analyzes specific instances and then generates a general principle that unifies the many instances and can be applied to new instances. Analogical Reasoning compares a new and unfamiliar situation to an old and familiar situation, so that beliefs about the old situation are transferred to the new situation. Deductive Reasoning and Inductive Reasoning both work from or toward generalizations, while Analogical Reasoning (in the early stages) works between specifics. Deductive Reasoning involves Premises that, when proven, lead with certainty to the Conclusion, while Inductive Reasoning and Analogical Reasoning involve Premises that offer varying degrees of

support for the Conclusion. Inductive Reasoning is based on reviewing many instances, and the likelihood of the inductive conclusion is strengthened by increasing the number and representativeness of instances considered. Reasoning by Analogy is based on just two instances, and the likelihood of the analogical conclusion is increased by increasing the number of relevant comparisons made between the two items being considered.[37] Analogical Reasoning could be stated *deductively* in this manner:

> The Source fits in Category C.
> The Target is like the Source.
> Therefore, the Target likely fits in Category C.

One writer suggested that "[a] deductive argument by analogy reminds us of a principle which (it is assumed) we all share, and demands that we draw a consistent conclusion."[38]

Analogical Reasoning could be stated *inductively* in this manner (sometimes called "item analogy"):

> The Source has features *a*, *b*, *c*, and *d*.
> The Target has features *a*, *b*, and *c*.
> Therefore, the Target likely has feature *d*.

Analogical Reasoning could be stated *analogically* in this manner (sometimes called "relational analogy"):

> The planets orbit the sun; similarly, electrons orbit the nucleus of an atom; that is, sun is to planet as nucleus is to electron; stated symbolically, A : B : : C : D.[39]

The lack of structured thinking characteristic of Analogical Reasoning gives analogy the power to generate new hypotheses that could not be otherwise deduced or even induced from current knowledge.[40] This hypothesis generation occurs at two levels, one being the instantaneous "aha moment" that sometimes occurs in an individual analogical comparison, and the other being the slow accretion of an organizing structure that links stored analogies in memory and makes their retrieval quick and efficient. The apocryphal story, of Archimedes displacing his bath water and realizing a way to determine the purity of the King's gold crown, is an example of the "mental leap" associated with Analogical Reasoning. It has long been noted that certain important scientific breakthroughs[41] and industrial innovations[42] were arrived at through such mental leaps. The slow development of an organizing structure, that arises out of a person's experience with many analogies over time, is recognized in the following observation: "[t]he progression from highly specific, single-case analogies to more abstract concepts or schemas is one of the most powerful roles that analogy plays in cognition."[43] A third feature of Analogical Reasoning is its ability to explain, by expressing something that is new or difficult to understand in terms of something that is already familiar or is easily more easily visualized and comprehended. An example is the oldest recorded scientific analogy, dating back 2,100 years, where the transmission of voice from the speaker's mouth to the listener's ear was compared to the circular waves that appear when a stone is thrown into smooth water–an apt analogy even today.[44]

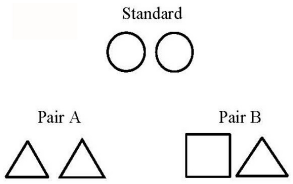
3. The Process of Analogical Reasoning. Theorists break Analogical Reasoning down into three stages: Retrieval, Mapping, and Projection (or Transfer).[45] From a psychological perspective, Retrieval is when the person faced with a new situation searches long term memory to find a Source (or Analog) to use for comparison.[46] With the Source and Target brought together in working memory, Mapping occurs. Mapping is the mental process of identifying the relevant similarities and dissimilarities between the Source and the Target. Projection (or Transfer) is the process in which the beliefs about the Source are projected onto the Target.[47] Some theorists believe that, through education and especially through experience, the reasoner can fashion a collection of analogical pairs into schemas that are more generalized and that permit greater success at solving new problems.[48] This describes the progress from novice to expert.

a. Retrieval. Retrieval requires searching the part of the brain where past experiences are stored, so a good memory can help the retrieval process. Similarity between the Target and the

Source can also influence which memories are retrieved.[49] In some psychological testing, people had difficulty retrieving relevant Sources when solving problems in a new context.[50] The test subjects tended to retrieve Sources that bore only surface similarities to the Target, rather than structural similarities to the problem at hand.[51] Stated differently, when faced with a new situation, people did not tend to remember prior examples that had comparable structure or comparable causal relationships.[52] Psychologists found that there is often a disconnect between what is most accessible in memory and what is most useful in Analogical Reasoning.[53] They found that novices are more attracted to surface similarities, while experts[54] develop and use abstract schemas that are not cluttered with irrelevant information.[55] Although cases that share surface similarities sometimes share structural similarities as well, often they do not, and when they don't, then novices could not grasp solutions as readily as experts could.[56]

b. Mapping. Different theorists have offered different ways to understand analogical Mapping. If all similarities and differences between to situations were to be considered, the results could be overwhelming. People have some way to winnow down the number of comparisons to a manageable level. There are many possible ways to map an analogy, and what works best depends on the situation and the goal.[57] As noted above, studies have shown that novices tend to notice surface similarities, while experts tend to see comparisons that fit into an analytical framework. The "structure-mapping theory" suggests that people are inherently attracted to matchings that reveal a comparable relational structure between the Source and the Target.[58] The "pragmatic mapping theory," which applies to problem-solving situations, suggests that people tend to focus on comparisons that they believe to be relevant to the goal to be achieved.

A simple example reflects the difference between a comparison based on surface features and relational comparison.[59]



Anyone comparing features would find almost no similarity between the circles, the triangles, and the squares, other than the fact they are pairs of bounded spaces. However, the relational similarity between the pair of identical circles and the pair of identical triangles dominates over the dissimilarity between the pair of identical circles and the pair made up of one square and one triangle.

Theorists have identified two "problems" in the Mapping process: the relevance problem and the representation problem. The relevance problem is the difficulty of picking out the features or relationships that are relevant to the analogy and should be included in the process of matching the Source to the Target. The representation problem is the difficulty encountered when the Source and the Target are structured differently, which may require that the Source or the Target, or both, be restructured in order for the analogy to proceed. In some instances this process of restructuring the Source mental modules unlocks the real creative potential of the analogy to cause us to rethink what we believe.[60]

c. Projection. Projection is the stage of drawing inferences. Once a sufficient number of features of the Source are aligned with features of the Target, inferences can be made about unknown features of the Target based on what is known about the Source. (See the inductive expression of Reasoning by Analogy described above). Factors influencing the choice of inferences are relational connectivity and goal relevance discussed above, as well as adaptability, or the ease with which inferences from the Source can be modified to fit the Target.[61] One group of writers said: "Normally knowledge is transferred from the source to the target domain and is used there to introduce new concepts or structures, give new explanations to phenomena, or solve given problems. This new

knowledge is in no way logically justified and should merely be seen as a hypothesis, but when used carefully, it can be the source of valuable inspiration."[62] At a higher level of abstraction, the Projection process may involve or lead to "the induction of generalized rules."[63]

d. Evaluating the Analogy. A completed analogy can be evaluated for: structural soundness (when the alignment of known features and projected inferences are structurally consistent); factual correctness (whether the analogical inferences are tested and found to be right, wrong, or indeterminate); and relevance (whether the inferences are relevant to the immediate goals).[64]

4. The Use of Examples. A frequent technique in Analogical Reasoning is the use of Examples. General principals can more readily be grasped when they are applied in an Example. Analogical comparisons often occur by comparing an Example (i.e., a mental model) of a prior experience with the Target. It is much easier to compare the similarities and differences of Examples than it is to compare one set of general principles to another set of general principles.

Individual cases in law constitute Examples of how legal rules, or legal principles, are applied to particular situations. While some legal disputes can be resolved deductively, by simply applying an established legal rule or principle to the new case, many times there is a gap (called a lacuna, pl. lacunae) in the rule or principle which makes it is unclear how the rules or principle should be applied to a new situation. In such situations, lawyers and judges search for an earlier case that shows how the rules or principles were applied by an appellate court in a comparable situation in the past. If the relevant aspects of the earlier case are sufficiently similar, then the earlier case is considered to be precedent, which determines the outcome of the new case. If the relevant aspects of the earlier case are too dissimilar to the new case, then the earlier case is "distinguishable," and constitutes weak precedent or no precedent for resolving the new case. This kind of case comparison is like comparing one Example to another.

5. Arguments by Analogy. Arguments by Analogy are structured around the idea that a proposition (i.e., the Target) can be supported or rejected based on a comparison with something else (i.e., a Source) that is familiar to the audience, or is easier to understand, or plays to the audience's emotions.

As an example of the new-to-old analogy, a new choice can be compared to an earlier choice, and if the earlier choice worked out well, then the positive feeling about the earlier choice can be projected onto the new one. If the earlier choice had bad consequences, then an opponent would use the analogy to project the dissatisfaction with the old choice onto the new. In response, the proponent of the new choice can distinguish the negative analogy by pointing out differences between the old and new choices, in order to avoid the negative association. Example: "As America was recovering from recession in 1936, Congress raised taxes and sent the economy into the Great Depression. Given the current serious recession, raising taxes could send us into another major depression."[65] A counter-argument might point out that a contributing factor to the Great Depression was the U.S. Congress's increasing the tariffs on imported goods, which cause other countries to enact retaliatory tariffs, which greatly constricted international trade–a factor that doesn't exist in the current situation. Another example: "my brother-in-law doubled his money buying gold; I'm going to put all my savings into gold." A counter-argument is that gold is at an historic high, and there are many examples of people who invest at the top of a market and lose their money. Or a client says "my first marriage ended in divorce so I'm never going to get married again." A counter-argument is that many people succeed in their second marriage (particularly if they don't marry a person with the same incompatible personality traits as the first spouse).

Analogical Arguments should be distinguished from using an analogy as a figure of speech or an illustration. Many times an analogy can be used to make an argument more vivid, or more understandable, or more humorous, without the overall argument becoming an Argument by Analogy.

The Argumentation Scheme for Argument From Analogy is set out in Section XI.D.1.b.

6. Judging the Validity of an Analogy. The validity of a Conclusion based on analogy depends on a number of things. First is the number of points of comparison: the greater the number, the stronger the analogy. Second is the degree of similarity between the Source and the Target, which includes not only the items themselves but also whether the items are in the same or different Domains: the greater and more relevant[66] the similarities, the stronger the analogy. Third is the dissimilarities between the Source and the Target: the fewer the dissimilarities, or the less relevant they are, the stronger the analogy. Fourth is the structural similarity between the Target and the Source: the more compatible the structures, the better the analogy. In higher-level comparisons, a good "fit" between the Target and the schema that have been developed from connecting past analogies into a coherent framework makes for a stronger analogy. Fifth is the degree of certainty claimed for the analogical conclusion: a modest claim of validity requires less justification than a conclusive claim of validity.

Professor Dedre Gentner, a prominent cognitive psychologist at Northwestern University, argues, based on her research, that for most people a common "relational structure" is more compelling than similarity of attributes.[67] She attributes this to the fact that "people like to find connected relational structure."[68] She explains: "people were more likely to import a fact from the base [i.e., Source] to the target when it was connected to other predicates that the target shared. In analogical matching, people are not interested in isolated coincidental matches; rather, they seek causal and logical connections, which gives analogy its inferential power."[69] Gentner offers criteria for evaluating an analogy and its inferences: (1) "structural soundness: whether the alignment and the projected inferences are structurally consistent"; (2) "the amount of new knowledge generated"; (3) "the factual validity of the projected inferences in the target"; (4) in problem-solving situations, "pragmatic relevance–whether the analogical inferences are relevant to the current goals"; and (5) "the adaptability of the inferences to the target problem."[70] If some of the particular inferences are clearly false, the analogy is weakened. If there is a poor structural match between the Source and the Target, confidence in the analogy is weakened.[71]

7. Using Analogical Reasoning With Case Law. Analogical Reasoning with case law involves comparing a new case with a prior case, to see whether the prior case is a binding precedent that determines the outcome of the new case or, if not binding, then whether it at least suggest rules or principles that could be used to resolve the new case. The outcome of the case comparison is affected by several factors, including the following:

(1) Is the prior case sufficiently similar, in both law[72] and fact,[73] to the present case that comparison is worthwhile?
(2) Is the prior case from a court whose decision is binding or at least authoritative?
(3) What part of the prior court's holding and opinion(s) are binding or authoritative?[74]
(4) Have changes in the law or changes in society weakened the continuing validity of the prior case?
(5) Was the prior case correctly decided (in retrospect)?

8. Analogies are More Than Just Words. In speech and writing, an Analogy brings two concepts together to be considered side-by-side.[75] Characteristically this is done by using a simile or a metaphor. A simile is "a figure of speech in which two essentially unlike things are compared, often in a phrase introduced by like or as."[76] A metaphor is "a figure of speech in which a word or phrase that ordinarily designates one thing is used to designate another, thus making an implicit comparison, as in 'a sea of troubles.'"[77] Wikipedia contrasts the simile and the metaphor: "Even though both similes and metaphors are forms of comparison, similes indirectly compare the two ideas and allow them to remain distinct in spite of their similarities, whereas metaphors compare two things directly."[78]

The following example of a simile describes a scene from the Trojan War, where the Trojans attacked the Greek defenses:

Down in the mass the Trojans pounded – Hector led them in,
charging in as a heavy surf roars in against the rip
at a river's mouth, swelled with rains from Zeus,
and on either side the jutting headlands bellow back
at the booming sea with matching thunder – in they came
the Trojans roaring in.

Homer, THE ILIAD, Book 17 (Fagels translation, 1998)

In THE POETICS, Aristotle wrote:

> But the greatest thing by far is to be a master of metaphor. It is the one thing that cannot be learnt from others; and it is also a sign of genius, since a good metaphor implies an intuitive perception of the similarity in dissimilars.

Examples of metaphors:

He walks out in front, the leader,
and walks at the rear, trusted by his companions.
Mighty net, protector of his people,
raging flood-wave who destroys even walls of stone!

The Epic of Gilgamesh, Tablet 1 (the world's oldest text)

The Lord is my shepherd; I shall not want. He maketh me to lie down in green pastures: He leadeth me beside the still waters. . . .

Psalm 23

"The marketplace of ideas." *Lamont v. Postmaster General*, 381 U.S. 301, 308 (1965).

All the world's a stage,
And all the men and women merely players:
They have their exits and their entrances;
And one man in his time plays many parts,
His acts being seven ages. . . .

Shakespeare, *As You Like It*

Love is a rose
but you better not pick it.
It only grows when it's on the vine.
A handful of thorns and
you'll know you've missed it.
You lose your love
when you say the word "mine".

Neil Young, *Love is a Rose* (1974)

Emotional experiences are difficult or impossible to convey by literal language. But, as literature, poetry, and drama universally show, analogy is a very effective way to transfer emotions.[79]

9. The Power of Metaphors In the Law. Justice Benjamin Cardozo wrote: "Metaphors in law are to be narrowly watched, for starting as devices to liberate thought, they end often by enslaving it." *Berkey v. Third Ave. Ry. Co.*, 155 N.E. 58 (1926). Professor Linda L. Berger has written that a legal metaphor (a special case of analogy) is far more than a figure of speech with which a term is transferred from its normal object to another object by implicit comparison. She suggests that "[b]y asking that we imagine a new idea 'as' a more familiar one or an abstract concept 'as' a concrete object, metaphor enables us to perceive and understand the unfamiliar."[80]

Professor Berger discussed four way of looking at metaphors.[81] The Greek view, reflected in the Greek understanding of the word metaphor as meaning "to carry over," is that the ideas of one thing are carried over to the other, either by substitution or by comparison. Later writers have argued that this view does not explain how we can pick out the relevant similarities among the many that may exist. They also say that this view ignores the differences between the items being compared, and does not explain how a comparison can be meaningful even if the items being compared are not truly similar.[82] A third view is that "the source and the target interact to create more meaning." The properties and relationships commonly believed to be true of the Source interact with the properties and relationships believed to

be true of the Target, to produce new meaning that is not just a reflection of something else. In this view of the interaction that occurs, the comparison is not really between the actual properties of the Source and the Target, but rather between the concepts that the terms of the metaphor call to mind.[83] A fourth view says that metaphors work by calling up primary metaphors that people absorb over time by living in the world. As we experience life, categories are slowly formed that through metaphors can be used to provide a structure for a new experience.[84] Professor Berger suggests that what we believe from experience is believed more deeply than what we learn by studying and reading. "Metaphor is persuasive because it draws on tacit knowledge that has been imbedded through unavoidable and repeated experience."[85] These "embedded metaphors" can "import an organizational structure that is not already there."[86] But in addition to providing structure, "metaphor influences reasoning because it allows us to borrow patterns of inference and method of evaluation from the source and transfer them to the target."[87] She also suggests that "metaphor derives much of its persuasive power from the quietness of its presence; unlike an announced position, it is hard to question a position based on assumptions that are rooted in entrenched, but unnoticed metaphors. . . . To the extent that we use a conceptual schema or a conceptual metaphor, we have already accepted its validity. When someone else uses it, we are predisposed to accept its validity."[88]

Professor Berger offers the following conclusions:

> This article thus concludes with three suggestions for practicing lawyers. First, by studying the use of metaphor and its cognitive effects, we can improve our understanding of how the law develops and how we might affect that development. An awareness of the cognitive power of metaphor, and of other methods of understanding one thing "in terms of" or "as" another, will help lawyers uncover the narratives, metaphors, and analogies that underlie much legal reasoning. Many of these imaginative maps for understanding are so deeply embedded in the development of the law and in our consciousness that we hardly realize they are there. If they go unnoticed, it is impossible to understand their impact or to counteract their effects.
>
> Second, lawyers can and should use metaphor creatively and consciously as a conceptual tool with recognized persuasive power. Metaphor focuses a spotlight on some aspects of a concept, reflects other aspects, and eclipses still others. Metaphor carries over from one source to another attributes, inferences, frameworks, reasoning methods, and evaluation standards. The use of metaphor can help the writer persuade the reader to "make the leap" and to do it "in such a way as to make it seem graceful, compelling, even obvious." As a result, lawyers should learn to choose and use their metaphors with care and to closely examine those used by others.
>
> * * *
>
> Third, understanding the cognitive power of metaphor helps lawyers gauge their ability to overturn a longstanding or dominant metaphor as well as the desirability of sidestepping it or tapping into its power. For example, the personification metaphor is both widespread and helpful; it "allows us to comprehend a wide variety of experiences with nonhuman entities." Because the metaphor allows us to provide a "coherent account," it is difficult to resist. Uncovering the metaphor and recognizing its power will allow advocates to make an informed decision about whether to stage a head-on confrontation, rejecting the metaphor altogether, . . . or sneak up from the rear, reframing the issue . . . .
>
> The lawyer who wants to influence judicial perceptions and decisions can draw on the insights of cognitive research. A new metaphor can make the target experience understandable in a different light by highlighting some aspects of the target and suppressing others. The new metaphor may entail very specific aspects of the source concept, and in this way, it can give the target a new meaning, sanctioning different actions, justifying revised inferences, and leading to different goals and results. Like the old

> metaphor, the new metaphor will be more persuasive to the extent that it grows out of bodily experience with the physical environment. The new metaphor, like the old, will be more persuasive to the extent that it accords with our cultural context, fully structures our understanding of the target, and efficiently allows us to borrow methods of reasoning and evaluation from the source.
>
> Although metaphor can lead to unthinking acceptance of inapt, outdated, or invalid doctrines, thinking metaphorically is an inescapable and fundamental method of increasing understanding. If we are in doubt as to what an object is . . . we deliberately try to consider it in as many different terms as its nature permits: lifting, smelling, tasting, tapping, holding in different lights, subjecting to different pressures, dividing, matching, contrasting . . . .[89] [Footnotes omitted]

Professor Berger suggests that we do this with a stultified legal metaphor–to lift it, examine it, probe it, and look at it anew.

VIII. DEFEASIBLE ARGUMENTS (DETAILED ANALYSIS). Defeasible Reasoning dates back at least as far as Aristotle's book TOPICS, which gave examples of arguments, used in everyday situations, that are true for the most part, or that are good enough for their intended purposes without being logically Valid (i.e. when the Premise is true, then it follows that the Conclusion must be true). A Defeasible Argument is an argument offered to support a Conclusion with recognition that the Premises or the Conclusion are subject to being invalidated by subsequent information or contrary Arguments that may later be encountered. In contrast to an Argument founded on Deductive Logic--where the Premises of the Argument are presented as irrefutably establishing the Conclusion, it is understood with a Defeasible Argument that the Argument is provisional only, more like a working hypothesis, to be used until something stronger or better comes along. Example:

(1) The rain in Spain stays mainly on the plain.
(2) Yesterday it rained in Spain.
(3) Therefore, it likely rained on the Spanish plain.

Weather reports may show that yesterday it rained only in Spain's Atlantic coast. Proposition (1) is undercut in this instance, but it is not defeated as a working rule. If, however, a thorough study of weather records show that the rain in Spain stays mainly on the Atlantic coast, then Proposition (1) is defeated.[90]

In modern times, Defeasible Reasoning was suggested by legal philosopher H.L.A. Hart in 1948,[91] was picked up by epistemologist (concerned with the nature of knowledge) philosopher Roderick M. Chisholm who applied it to perceptions about the world, and was later carried forward by American philosopher John L. Pollock in the 1970s, who developed a scheme of argumentation based on Defeasible Arguments. In Pollock's view, reasoning "proceeds by constructing arguments for conclusions." As with Aristotle's model of argumentation, in Pollock's view, Arguments are based on Premises. In Deductive Logic, the Conclusions we draw from the Premises are not defeasible (i.e., not subject to being defeated). With Inductive Logic, Pollock said, as we learn more information we sometimes find that our original Premises remain true but the Conclusions we drew from these Premises are no longer supportable, and must be retracted or modified. (See the black swan discussion in *The Role of Reasoning and Persuasion in the Legal Process*, Section VII.B.1.) Thus, in Inductive Logic our Conclusions are always defeasible, and subject to being disproved by what Pollock called "Defeaters," either "Undercutting Defeaters" or "Rebutting Defeaters." An Undercutting Defeater is a fact or an argument that gives reason to doubt the Conclusion being proposed (usually by weakening or disproving a Premise). A Rebutting Defeater is an Argument with a Conclusion that is opposed to the Conclusion of the original Argument.[92] The original Argument is defeated if the Rebutting Defeater is the stronger argument.[93]

A. NOT TRUTH, BUT PRIMA FACIE ACCEPTABILITY. Pollock's focus on the

defeasibility of arguments steers him away from truth as a criterion for judging when an Argument is valid. While logical Validity involves Premises that establish with certainty that the Conclusion is true, Pollock's scheme involves Arguments that are justifiably believable, in light of what is known at the time. Pollock deals with Arguments that are prima facie, which he describes as an Argument that is sufficient to justify belief. A Conclusion is "warranted" if it is supported by some ultimately undefeated Argument.[94] An Argument is ultimately undefeated if it has not been rebutted by a contrary Argument. Such a contrary Argument is called a Rebutting Defeater. A Rebutting Defeater is a prima facie reason for believing the negation of the Conclusion.[95] Pollock's concept of Defeasible Arguments has had its greatest influence in computer-based systems designed to evaluate competing arguments and pick the strongest argument. This ability to arrive at the best of competing arguments is an essential component of "artificial intelligence," which is a computer program that tries to "think" like a human.

Since Pollock deals with prima facie arguments, he is merely identifying arguments or data that *could* weaken a Conclusion (i.e., an undercutter) or *could* defeat a Conclusion (i.e., a defeater). Whether a counter-argument *does* undercut or defeat a Conclusion must be determined by other criteria. Computers have defeated the best chess players. But computers are a long way from writing another *Hamlet* or painting another *Mona Lisa*, or even picking a good investment.

B. DEFEASIBLE ARGUMENTS IN LAW. Legal arguments sometimes involve inferences that require that a certain Conclusion be drawn from the Premises, and sometimes they involve inferences that permit but do not require the Conclusion to be drawn.[96] The latter category is a type of Defeasible legal argument. The concept of Defeasible Argument is also a good way to approach the shifting burden of producing evidence and the shifting burden of persuasion that occurs in some court cases. In a court case, at the outset the party seeking judicial relief has the burden of producing evidence sufficient to require that the issue be presented to the fact finder. If successful, then the same party has the burden of persuasion to prove his claim in accordance with the required standard of proof. In some instances, the party with the burden of producing evidence introduces evidence that causes the burden of producing evidence to shift to the opposite party, so that the opposite party will lose unless it produces evidence to the contrary.

Procedural presumptions are examples of Defeasible Arguments. In a civil case, proof that triggers a presumption can shift the burden of producing evidence to the opposing party. The proponent will win under that presumption unless the presumption is met by contrary evidence that neutralizes the presumption, or by evidence that raises a counter-presumption, or by a different rule of law that, if applicable, would defeat the Conclusion. Some presumptions vanish in the face of contrary evidence, while other presumptions retain evidentiary weight even in the face of contrary evidence. See Section XII for further discussion of prima facie evidence, presumptions, and burdens of proof.

Example 1: The issue in contention is whether an asset is community property.

(1) Defeasible Argument: At the outset, the burden is on the party claiming community property to prove that the asset exists and that the asset is community property. This often done by proving that the asset was/is possessed by a spouse during marriage. The burden of persuasion for this task is a preponderance of the evidence. If the proponent introduces evidence that the asset was/is possessed by a spouse during marriage, then a presumption arises that the asset is community property. Tex. Fam. Code § 3.002. This presumption is defeasible, meaning that certain facts can disprove the conclusion of community property. If the community presumption is triggered, then the burden shifts to the other party to undercut or rebut the presumption, or else the presumption of community will prevail.

(2) Undercutting Defeater: argument that the asset was not possessed by a spouse during marriage. This argument, if proven, would eliminate the community property presumption. However, eliminating the community property presumption does not, of itself, establish that the asset is not community property. It merely removes the community presumption. In the absence of the community presumption, the burden of producing evidence rests upon the proponent of community property to establish the community character of the asset by a preponderance of the evidence. For this reason, proof of no possession by a spouse merely undercuts the community property argument, but it does not defeat it.

(3) Rebutting Defeater: argument that the asset was owned prior to marriage. This argument, if proven, would establish that the asset is separate property, so it is a Rebutting Defeater. The burden of persuasion for this Rebutting Defeater is clear and convincing evidence. Tex. Fam. Code § 3.003(b).

(4) Rebutting Defeater: argument that the spouse acquired the asset during marriage by gift, descent, or devise. This argument, if proven, would establish that the asset is separate property, so it is a Rebutting Defeater. The burden of persuasion for this argument is clear and convincing evidence. Tex. Fam. Code § 3.003(b). If one spouse deeds separate property real estate to the other spouse, a presumption of gift arises. *Raymond v. Raymond*, 190 S.W.3d 77, 81 (Tex. App.–Houston [1st Dist.] 2005, no pet.) (deed conveying separate realty of one spouse to the other spouse raised presumption of gift that can be rebutted only by evidence of fraud, accident, or mistake); *accord, Magness v. Magness*, 241 S.W.3d 910, 913 (Tex. App.–Dallas 2007, pet. denied). If evidence is admitted that the property was acquired during marriage by a transfer from a parent, then a rebuttable presumption arises that transfer was intended as a gift. *Rusk v. Rusk*, 5 S.W. 3d 277 (Tex. App.–Houston [14th Dist.] 199, pet denied.) This presumption of parent-to-child gift is a Rebutting Defeater. However this presumption of gift is itself defeasible, and can be overcome by proof that the transfer was not made with donative intent, or that the spouse paid consideration for the transfer, or that the transfer was a gift to both spouses[97] (which is a Defeater as to half of the asset). The burden of persuasion to overcome the presumption of gift arising from a transfer from a parent to a child is clear and convincing evidence. *Bogart v. Somer*, 762 S.W.2d 577, 577 (Tex. 1988).

(5) Rebutting Defeater: offering evidence that the asset is separate property on account of a partition or exchange agreement or separate property income agreement. The burden of persuasion is clear and convincing evidence. Tex. Fam. Code § 3.003(b). This Defeater can itself be defeated if the agreement is held by a preponderance of the evidence to be unenforceable.

(6) Rebutting Defeater: offering evidence that the asset was acquired in exchange for separate property, so that the asset is a mutation of separate property. This evidence, if believed, would establish that the asset is separate property, so it is a Rebutting Defeater. The burden of persuasion of this Rebutting Defeater is clear and convincing evidence. Tex. Fam. Code § 3.003(b).

(7) Rebutting Defeater: showing that the ownership of the asset is governed by a Federal law that preempts state community property law and makes the asset the sole property of one spouse. See *Wissner v. Wissner*, 338 U.S. 655 (1950) (federal law preempted community property rights in life insurance provided to military servicemen); *Free v. Bland*, 369 U. S. 663 (1962) (Treasury Regulations, creating a right of survivorship in U.S. Savings Bonds that were registered in co-ownership form, preempted Texas community property law); *Hisquierdo v. Hisquierdo*, 439 U.S. 572 (2979) (division of railroad retirement benefits upon divorce preempted); *McCarty v. McCarty*, 453 U.S. 219 (1981) (division of military retirement benefits upon divorce preempted); *Mansell v. Mansell*, 490 U.S. 581 (1989) (division of Veteran's

Administration disability benefits upon divorce preempted). Under Texas Family Code § 3.003(b), the burden of persuasion is clear and convincing evidence. However, the question arises whether Federal law preempts the elevated burden of proof under Texas law.

(8) Rebutting Defeater: proving a prior adjudication of separate property, such as a prior decree of divorce ruling that the asset is separate property. See *In re Staley*, 320 S.W.3d 490, 502-03 (Tex. App.–Dallas 2010, no pet.).

(9) Rebutting Defeater: proving estoppel or quasi-estoppel to assert a community property claim.

Example 2: The issue is whether real property acquired by a spouse during marriage is separate property.

(1) Argument: Real property acquired by a spouse during marriage is presumptively community property. Tex. Fam. Code § 3.002.

(2) Rebutting Defeater: proof that separate property consideration was used to acquire the property. The rule of mutation defeats the community property presumption.

(3) Rebutting Defeater: A separate property recital in the deed gives rise to a presumption that the property conveyed is the receiving spouse's separate property. *Hodge v. Ellis*, 277 S.W.2d 900, 903 (Tex. 1955) ("The elemental presumption in favor of the community as to land acquired in the name of either spouse during the marriage is, indeed, sometimes displaced by a presumption in favor of the separate estate of the wife where the deed of acquisition recites either that the land is conveyed to her as her separate property, or that the consideration is from her separate estate, or includes both types of recitation"). This deed-based presumption, if triggered, shifts both the burden of producing evidence and the burden of persuasion to the opposing party. However, this argument is Defeasible, unless the other spouse can be charged with consenting to the recital, in which event it is generally not Defeasible. *Messer v. Johnson*, 422 S.W.2d 908, 912 (Tex. 1968). However, even if the other spouse consented to the separate property recital, the "irrebuttable" presumption of separate property can be rebutted by proof of fraud, accident or mistake. If proof of fraud, accident or mistake rebuts the separate property presumption, the property goes back to being presumed to be community property under Tex. Fam. Code § 3.002. Some other way of proving separate property must then be used to overcome the presumption of community.

IX. THE TOULMIN ARGUMENTATION MODEL (DETAILED ANALYSIS).

A. THE MAN AND THE TIMES. Stephen Toulmin was born in London, England in 1922. He received a B.A. in Mathematics and Physics from King's College, Cambridge. He served the British war effort during World War II, and after the war received an M.A. and Ph.D. from Cambridge University. Toulmin taught at Oxford University, Melbourne University, and the University of Leeds. He moved to the United States in 1965, where he taught at New York University, Stanford University, Columbia University, the University of Massachusetts, Michigan State University, the University of Chicago, Northwestern University, the University of California Santa Cruz, and the University of Southern California. He also held temporary teaching positions at S.M.U. and Bryn Mawr College. Toulmin became an American citizen. He died in Los Angeles in 2009. Toulmin is one of the earliest, and the most renowned, of recent thinkers who espoused what is now called Informal Logic.

Informal Logic developed in the university research environments during the 1970s, as a reaction against Formal Logic, (i.e., Deductive and Inductive Logic),[98] which had dominated thinking on Logic for over two thousand years. However, more than a decade earlier Toulmin had entered the struggle against formal Logic as the way to visualize and construct arguments. Toulmin believed that the conceptions of deductive and inductive reasoning, while important to mathematicians, philosophers, and logicians, had no relevance to the argumentation practiced by people in

their business, professional, and personal lives.[99] Toulmin believed that argumentation was not a process of inferring Conclusions from Premises, but was instead a process of asserting a Claim, and then finding ways to justify it.[100] To Toulmin, inference operates prospectively, while justification operates retrospectively.[101] In 1958, Toulmin published his book THE USES OF ARGUMENT, in which he argued that the criteria for judging good and bad Arguments were not logically formal or absolute, but was instead "field-dependent" (i.e. they change from field to field).[102] However, Toulmin also believed that the fundamental structure of Arguments was "field-invariant" (i.e., they did not change from field to field).[103] Toulmin's effort to cut argumentation's moorings from formal Logic did not sit well with British philosophers, who essentially ostracized him from their ongoing dialogues. In the United States, however, Toulmin's work was welcomed by professors of Speech, English, and the Law, and later Communications Departments in American universities, with the result that Toulmin spent the latter part of his life teaching across America, and eventually became an American citizen.

B. OVERVIEW OF TOULMIN'S MODEL. Toulmin's Argumentation Model can be seen as a way for a person constructing an Argument to put the pieces of the Argument into place. Toulmin's framework for arguments can also be used to reconstruct an existing Argument, to break it down into constituent parts. Toulmin divided the invariant structural components of Arguments into two groups: the first group consists of Grounds, Claims and Warrants; the second group consists of Backing, Qualifiers and Rebuttals.[104] In thumbnail sketch, under the Toulmin Model the components of an Argument work this way:

•Claim: A statement that something is so.
•Data: The factual support for the claim.
•Warrant: The link between the grounds and the claim.
•Backing: Support for the warrant.
•Modality: The degree of certainty employed in offering the argument.
•Rebuttal: Exceptions to the claim.[105]

Here is one writer's suggestion on how to implement the Toulmin Model in constructing an argument:

1. Make your claim.
2. Refine or qualify your claim.
3. Present good reasons to support your claim.
4. Explain the underlying assumptions that connect your reasons to your claim. If an underlying assumption is controversial, provide backing for it.
5. Provide additional grounds to support your claim.
6. Acknowledge and respond to possible counterarguments.
7. Draw a conclusion, stated as strongly as possible.[106]

Toulmin's Argumentation Model differs from the traditional Premises-Conclusion Model in several ways.

To begin with, Toulmin rejected any absolute measure of the validity of an ordinary Argument, This kind of certainty might be achievable in mathematics or geometry or pure Logic, but not in ordinary argumentation. Instead, Toulmin proposed that Arguments in different fields are judged in ways unique to that field. Notwithstanding the variable criteria for judging arguments, Toulmin believed that there is a *structure* that underlies Arguments in all fields, and this structure was reflected in his dynamic model of asserting a Claim, and justifying it with Grounds that are connected to the Conclusion by Warrants. Another consequence of Toulmin's rejection of an absolute measure of validity of Arguments was his Model's capacity to accept Conclusions that are less-than-certain. While Aristotle's full body of work presented 100% certain Deductive Logic as just one of several approaches to reasoning and argumentation, those that came after Aristotle lost sight of that fact and for 2,000 years Deductive Logic became the paradigm for correct reasoning. While inroads were made when Inductive Reasoning and statistical probability gained prominence with the rise of modern mathematics and modern science, Inductive Reasoning never weakened Deductive Logic's grip on argument theory.

Toulmin's 1958 book on argumentation, amplified by his later textbook on informal logic, was one of the earliest conscious efforts to abandon the requirement that an Argument conform to the standards of Logic. It instead required Arguments to conform to the standards and expectation of the field in which the Argument occurs.[107]

Another difference is that Toulmin's Model can accommodate Arguments that consist of just a Conclusion, without stated Premises of any kind. In Toulmin's Model, the justification for the Conclusion can go unstated unless the Conclusion is challenged. Then it must be supported by Grounds, and Warrants that connect the Grounds to the Claim. An example is evidentiary rulings by a judge in trial. Usually the judge does not explain an evidentiary ruling, and the basis for it must be inferred from the objection or the response to the objection. In a bench trial, the Texas Rules of Civil Procedure do not contemplate a judge stating the basis for his/her adjudication, until after the judgment is signed and then only pursuant to a Rule 296 request for findings of fact and conclusions of law. Toulmin's Model has the capacity to depict Arguments that are not completely fleshed out because the interaction between the proponent and the respondent didn't require full development.

Another point of difference between the Toulmin Model and the Premise-Conclusion Model is that ordinary Arguments often do not reflect the formal structure of Premises leading to a Conclusion. If Premises are stated at all, there may be only one, and not the two that are necessary to make a Syllogism. Sometimes an unstated second Premise is lurking in the Argument, but sometimes there is no second Premise. Toulmin jettisoned Premise and Conclusion and substituted terms he said were more indicative of informal reasoning.

Another difference is that Toulmin's Model is capable of reflecting a dynamic process of interaction that occurs between the proponent and the respondent in many informal arguments. Toulmin saw Arguments, not as fixed in form, but rather as an interactive process through which the Argument unfolds.

Another difference is that Toulmin visualized the Warrants in his Model to be Defeasible.[108] This differentiated them from Deductive Logic, which requires the Premises to lead to the Conclusion with 100% certainty, making the arguments indefeasible.

It was not originally Toulmin's purpose to revamp the conventional view of argumentation 2,300 years after Aristotle suggested it; nonetheless, that was the importance of his work to many others, and that is what he is best remembered for, more so than for his other contributions to philosophy.

C. THE COMPONENTS OF THE TOULMIN MODEL. The six components of Toulmin's Model of Argumentation are examined below.

1. Claims. In Toulmin's Model, a Claim is the point that the arguer wishes to make, which might culminate in an action like a vote, or a favorable ruling, or the purchase of an insurance policy, or a contribution to a church, charity, or political campaign. Toulmin called a Claim "an assertion put forward publicly for acceptance."[109] A Claim is analogous to the Conclusion in the syllogistic model.

2. Grounds. If Claims are challenged, they must be supported by Grounds. Grounds are the evidence that supports the Claim. Toulmin called Grounds "statements specifying particular facts about a situation relied on to clarify and make good the previous claim."[110] Grounds (often called "data" in the literature), are analogous to the Minor Premise in Aristotle's syllogistic model. Grounds are "some fact or observation about the situation under discussion."[111] Grounds consist of data, observations, surveys, statistical analysis, personal opinions, expert opinions, witness testimony, etc. that are relevant to the issue at hand.[112] Grounds can vary from an anecdotal report to a statistical analysis of many instances, or an eye witness account, or pieces of physical evidence. Philosophy Professor David Hitchcock has written: "The most trustworthy sources of

[Grounds] appear to be direct observation, written records of direct observation, memory of what one has previously observed or experienced, personal testimony, previous good reasoning or argument, expert opinion, and appeal to an authoritative reference source."[113]

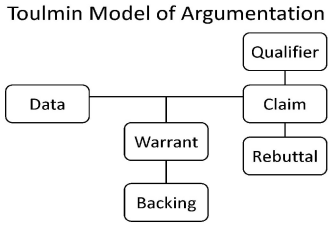
3. Warrants. Toulmin said that Warrants are "general, hypothetical statements, which can act as bridges, and authorise the sort of step to which our argument commits us."[114] The Warrant justifies "moving" from the Grounds to the Claim. The Warrant is the proponent's justification for inferring the Claim from the Grounds.[115] The Warrant is the reasoning process that is offered to show that the Grounds support the Claim. Warrants can be authoritative, motivational, or substantive. Authoritative Warrants rely on an authoritative source, like government statistics, or expert opinion. Motivational Warrants are arguments that appeal to the audience's motives or emotions. Substantive Warrants are akin to traditional Logic, such as deduction from a general Premise, or induction from a representative sampling. Warrants are "field dependent."[116] In fields where a "fully established and articulated body of knowledge exists," Warrants may be found in the form of laws, rules, or principles.[117] However, in less-developed fields it may be harder to articulate the Warrants employed in Arguments.[118] Warrants are distinguished from Grounds based on the role they play in the Argument, not based on content.[119]

4. Backing. Some Warrants are readily accepted without additional support. In those instances, the Claim is substantiated by the Grounds tied to the Claim through the Warrant. If the Warrant is challenged, or if a challenge to the Warrant is anticipated, then the Warrant may be justified by offering Backing for the Warrant.[120] Backing differs from Grounds in that Backing supports the Warrants without directly supporting the Claim. Backing addresses two issues: (1) is the Warrant reliable at all, and (2) does that Warrant really apply to the present specific case?[121]

5. Qualifiers. The strength of the movement from the Grounds to the Claim will vary from Argument to Argument. The proponent's conviction regarding the strength of an Argument is reflected through Qualifiers, which are "phrases showing what kind and degree of reliance is to be placed on the conclusion, given the arguments available to support them."[122] Qualifiers include words such as "possibly," "probably," "generally," usually," "presumably," "necessarily," "certainly," etc. These indicators are called "Modal Qualifiers."[123] Toulmin wrote that modal terms are characterized in two ways: by "force" and by "criteria." "Force" is the strength or power of the Claim. A claim, like saying that a ball thrown up must come down, has more force than the assertion that Tolstoy is a greater writer than Dostoevsky.[124] Toulmin considered Force to be field invariant. "Criteria" are the standards used to justify a Claim.[125] These standards are field dependent, so that the criteria to justify a theory in physics are different from the criteria used to evaluate the importance of Claude Monet's 1872 painting *Impressions, Sunrise*.[126] A Warrant can also be qualified by giving it a statistical probability, or by acknowledging the existence of exceptions to the Warrant.[127]

6. Rebuttals. If the Warrant is defeasible, then the proponent may wish to address possible Rebuttals.[128] Toulmin described a Rebuttal as "the extraordinary or exceptional circumstances that might undermine the force of the supporting arguments."[129] A Rebuttal is a counter-argument that shows that the primary Argument is not true, or not always true. A Rebuttal is itself an Argument that can involve the six fundamental components of all Arguments.

D. THE TOULMIN ARGUMENTATION MODEL. The following diagram is a typical depiction of the Toulmin Model:



The diagram reflects that the Data support the Claim through the Warrants. The Claim should be properly qualified, and the Warrants should be supported by Backing if need be. The Claim must be constructed with an eye toward rebutting arguments that can be brought against the Claim.

E. ARGUMENTATION IS A PROCESS. The Premise-Conclusion Model of argumentation is a static depiction of the structure of Arguments. It assumes that Arguments are the derivation of a Conclusion from Premises. The Toulmin Model starts with a Claim, and shows how the Claim can be justified. The Toulmin Model is more dynamic,[130] and can be seen as a movement from Grounds to the Claim by way of the Warrant. Toulmin's Model can depict an Argument that is no more than a bare Claim, but which, when challenged, can be supported by Grounds (i.e., Data) that are connected to the Claim through a Warrant. The Warrant may be accepted as asserted, but if it is not, the Warrant can be supported by Backing. The strength of the Argument can be reflected through Qualifiers, either when it is first stated or in response to challenges that arise after the Claim is presented. Even Qualified Claims, that are supported by Grounds that are connected to the Claim by a Warrant that has Backing, are subject to being defeated by Rebuttals. Rebuttals are Arguments on their own, which are subject to the same Toulmin Argumentation Model.

X. FALLACIOUS ARGUMENTS (DETAILED ANALYSIS). Another way of modeling certain kinds of Arguments is the concept of Fallacy. In the most general sense, a Fallacy is an erroneous Argument. Some Arguments are fallacious because the reasoning underlying the Argument is flawed. Some Arguments are fallacious because they play on emotions instead of relying on reasoning. Some Arguments are fallacious because of the weakness of words, such as ambiguity,[131] amphiboly,[132] equivocation,[133] or vagueness.[134]

Aristotle identified Syllogistic Fallacies, or mistakes in the construction or application of a Syllogism that destroy its integrity. As noted in Section II above, medieval thinkers compiled a long list of specious arguments that they labeled "Fallacies." This list included not only fallacious reasoning but also fallacious argumentation techniques. Over the millennia, Fallacies have been categorized in many different ways. In this Article, Fallacies are divided into two broad categories: Fallacies of Reasoning and Fallacies of Argument.

During the Middle Ages, fallacious arguments were studied assiduously, so that these flawed arguments could be avoided, or, if used by an opponent, could be labeled as a Fallacy. Some modern theorists have condemned the study of Fallacies on the ground that you should teach the good, not the bad. However, it is important to be able to identify Fallacies, not only because they can be attacked for their recognized weakness but also because *in certain circumstances* Fallacies can be valid Arguments and in many instances they can be effective. "[U]ntil recently, many common but defeasible forms of argument were identified as fallacious. Yet it has been shown that, in many instances, arguments of these types are not fallacious but instead provide provisional support for their conclusions."[135] A list of Fallacies is useful, therefore, both in constructing Arguments and in rebutting them.[136]

A. FALLACIES OF DEDUCTIVE REASONING. Fallacious reasoning is spurious reasoning that appears to be valid.[137] In the realm of Deductive Reasoning, six Syllogistic Fallacies have been identified (the first six listed below). Other Deductive Fallacies that do not involve Syllogisms are also listed below.

1. The Fallacy of Four Terms. A legitimate Syllogism has three Terms: the Major Term; the Minor Term; and the Middle Term. See Section VII.A.1. The Fallacy of Four Terms occurs when the Syllogism has four Terms, which occurs because the Term in the Major Premise that is supposed to be the Middle Term does not match the Term in the Minor Premise that is supposed to be the Middle Term.

All rivers have banks.
All banks have vaults.

So, all rivers have vaults.[138]

People seldom use different words in each instance of the Middle Term, since it is so evidently wrong. The Fallacy usually results from using same word as the Middle Term in both Premises, but where the meaning or sense of the word is different in the two Premises. This problem results from Ambiguity. When done intentionally, the defect is called "Equivocation." Example:

A poor lesson is better than a good lesson because a poor lesson is better than nothing, and nothing is better than a good lesson.[139]

2. The Fallacy of the Undistributed Middle Term. The Fallacy of the Undistributed Middle Term occurs when the Middle Term of a Syllogism is not distributed in either the Major Premise or the Minor Premise, so it never refers to all members of the category it describes. A Term is "Distributed" when it applies to all members of the class to which it refers. Examples of an Undistributed Middle Term:

All Zs are Bs.
Y is B.
Therefore, Y is Z.

All Arguments with undistributed Middle Terms are bad arguments.
This is a bad Argument.
Therefore, this Argument has an undistributed Middle.[140]

The Fallacy of the Undistributed Middle was mentioned in *Hicks v. State*, 241 S.W.3d 543, 546 (Tex. Crim. App. 2007):

The Legislature has clearly provided the standard for establishing when an actor has assumed "care, custody, or control" of a disabled individual under subsection (b)(2). This standard is clearly and unambiguously set out in subsection (d). Although "possession" in Section 1.07(a)(39) is defined as "care, custody, or control," the court of appeals incorrectly assumed that "care, custody, or control" under Section 22.04(b)(2) means "possession." This is like saying, "I am a mammal, a dog is a mammal; therefore, I am a dog." This is the fallacy of the undistributed middle.[18] (Some footnotes omitted)

FN18. Douglas Lind, Logic and Legal Reasoning 130-31 (The National Judicial College 2001).

Note that this Fallacy disqualifies the Syllogism, but that does not alone prove that the Conclusion of the Syllogism is false. The following example suffers from an Undistributed Middle, but the Conclusion is still true:

All even numbers are divisible by 2.
24 is divisible by 2.
Therefore, 24 is an even number.

3. The Fallacy of Illicit Process of the Major or Illicit Minor Term. Where the Conclusion of a Syllogism contains a Distributed term that is not Distributed in its related Premise, it is called an "Illicit Process." The Illicit Process of the Major term occurs when the Major Term is Undistributed in the Major Premise but is Distributed in the Conclusion. Fallacious example:

Some Bs are Cs.
All As are Bs.
Therefore, all As are Cs.

An Illicit Minor Term occurs when the Minor Term is Undistributed in the Minor Premise but Distributed in the Conclusion. Fallacious example:

All Bs are Cs.
Some As are Bs.
Therefore, all As are Cs.

4. The Fallacy of Negative Premises. The rules of Syllogisms permit only one of the two Premises to be negative. The Fallacy of Negative Premises occurs when both the Major Premise and the Minor Premise are negative, in which case there is no connection between the Major and the Minor Premises that can support a Conclusion. Example:

"No As are Bs. No Bs are Cs." From these Premises, you cannot tell whether all As are Bs.

5. The Fallacy of Drawing Affirmative Conclusions From a Negative Premise. Where a Syllogism contains a negative Premise, it cannot have an affirmative Conclusion. Fallacious example:

All Bs are Cs.
A is not a B.
Therefore A is not a C.

6. The Existential Fallacy. The Existential Fallacy occurs when a Syllogism in Standard Form (i.e., the Major Premise is followed by the Minor Premise which is followed by the Conclusion) has two Universal Premises and a particular Conclusion. Example:

All P are Q.
All X are P.
Therefore, some X are Q.[141]

7. The Fallacy of Denying the Antecedent. There are two Fallacies of Implication. The first is the Fallacy of Denying the Antecedent which occurs when disproving the Antecedent of a Conditional Proposition (if P then Q) is taken as proof that the Consequent is false. Disproving the Antecedent does not prove that the Consequent is false. It only establishes that the Implication does not apply to this particular situation. Fallacious example:

P implies Q.
P is false.
Therefore, Q is false.

8. The Fallacy of Affirming the Consequent. The second Fallacy of Implication is Affirming the Consequent. This logical fallacy, identified by Aristotle, occurs when someone concludes that, because "P implies Q", therefore "Q implies P". The term "Affirming the Consequent" comes from the fact that "the Consequent" in the conditional clause, which is "Q", has been "affirmed," or proven to be true. This Fallacy is also known as Converse Error. The Fallacy is expressed: "If A then B. B is true. Therefore, A is true." Fallacious example:

(1) If P, then Q. (1) P implies Q.
(2) Q. or (2) Q.
(3) Therefore, P. (3) Therefore, P.

We can put the discussion into the context of cause and effect. Where there are several possible causes of a particular effect, the existence of that effect cannot itself establish which cause is involved. However, knowing the list of causes of a particular effect certainly can be useful in focusing efforts to determine which cause is involved. If a medical condition is known to result from several causes, then the physician knows which causes to rule out or confirm until the actual cause is determined.

The case of *E.I. du Pont de Nemours & Co. v. Robinson*, 923 S.W.2d 549 (Tex. 1995), exemplifies the fallacy of Affirming the Consequent. In this case, the Robinsons sued du Pont, alleging that an adulterant contained in du Pont's Benlate fungicide, that was purchased by the Robinsons and applied to their pecan trees, caused the trees to have chlorosis, a yellowing of the leaves. *Id.* at 559. The Robinsons' expert studied their trees and concluded that the chlorosis resulted from SU herbicides that had inadvertently contaminated the Benlate. The expert claimed that the fact that SU herbicides caused chlorosis had been established by analysis he had conducted prior to being hired in the case. The Robinsons' expert "did not conduct any soil or tissue testing, did not research relevant weather conditions, and did not test any of the Benlate used by the Robinsons, even though they had one opened box of the fungicide remaining." *Id.* at 551. To put the Robinsons' expert's analysis into syllogistic form: (1) SU herbicides cause chlorosis; (2) the Robinsons' trees exhibited chlorosis; (3) therefore the Benlate the Robinsons applied to their trees was contaminated with SU herbicides. His reasoning took the form:

(1) P implies Q.
(2) Q.
(3) Therefore, P.

This is Aristotle's fallacy of Affirming the Consequent. Since there are several causes of chlorosis, the existence of chlorosis in and of itself does not establish the particular cause in the particular instance. Additional empirical efforts are required to rule out all other possible causes or to positively confirm one cause. It can also be said that the Robinsons' expert committed the Inductive Fallacy of Post Hoc Ergo Propter Hoc (see Section VIII.F.7), since he reasoned that because chlorosis followed application of the Benlate, it therefore must have been caused by application of the Benlate. At best the expert's prior work established SU herbicide as one possible cause of chlorosis, but in the case at hand the expert did not make the effort to empirically rule out other possible causes of chlorosis, and just as importantly he did not empirically confirm his conclusion of contamination by chemically analyzing the Robinsons' partially unused Benlate to see if it contained SU herbicide.

Although Affirming the Consequent is a logical Fallacy, it can still be a helpful tool in problem-solving. Example: A patient enters the clinic with a body temperature of 100 degrees Fahrenheit. Possible causes include: recent physical exertion; a recent hot bath; an elevated temperature that is normal for the patient; a microbial infection; a viral infection. The physician must determine the cause in order to determine the best medical response. The physician can narrow the possible causes of the fever by questioning the patient about recent physical exertions or a recent bath, or looking at the patient's chart of prior temperature readings. Even after ruling out these causes, the physician must still choose between a bacterial and a viral infection. If it is flu season and a member of the patient's household has recently been confirmed to have flu, the physician may conclude that it is probable that the elevated temperature results from the flu virus. An antibiotic would therefore be useless and the best advice is to go home, rest, and drink plenty of liquids. This assumption can be conclusively determined by laboratory analysis of a saliva culture.

9. The Fallacy of False Dilemma. A Dichotomy reduces a set of possibilities down to a set number (2, 3, or more). The Fallacy of False Dilemma (also known as False Dichotomy) occurs when a Proposition requires you to choose between specified choices, and in reality all choices are false or there are other available choices that have been omitted from the Dichotomy. The Dichotomy has the structure: "Either A is true or B is true; B is false; therefore, A is true". The Dichotomy is false when both A and B are false, and when the choices presented are not collectively exhaustive. False Dilemma can be expressed by the proposition "You are either with us, or against us." This was both Hillary Clinton's[142] and George W. Bush's[143] reaction to the September 11, 2001 attacks on the World Trade Towers and the Pentagon. Although the logic may be fallacious, the economic and military might of the United States nonetheless forced such a choice on other nations. The opposite Fallacy, Denying the Correlative, occurs when an arguer introduces alternatives when none exist.[144]

10. Accident. The Fallacy of Accident, an Aristotletian Fallacy, also called "Destroying the Exception" or "Sweeping Generalization," occurs when one attempts to apply a legitimate general rule to an irrelevant situation that should be recognized as an exception to the general rule. "Guilt by Association" is an instance of the Fallacy of Accident.

11. Ignorance of Refutation. Aristotle described the Fallacy of Ignorance of Refutation (Ignoratio Elenchi) as an argument that may be valid, but does not address the matter in dispute. The error is sometimes called the Fallacy of Missing the Point.

12. Inconsistency. Inconsistency occurs when a set of standards is applied to one Argument but not to another Argument that should be evaluated on the same basis. Special Pleading is a form of Inconsistency. See Section X.D.35.

13. Non Sequitur. A Non Sequitur is an Argument in which the Conclusion does not follow by logical necessity from the Premises. A Non Sequi-

tur can be unmasked by finding one counter-example where the Premises are true and the Conclusion is false. Most often, however, a Non Sequitur arises when one or both of the Premises are logically irrelevant to the Conclusion. Since relevancy is often a matter of degree, whether a Premise is irrelevant to the Conclusion is a subjective assessment.

14. Slippery Slope. A Slippery Slope argument attempts to refute a Proposition by claiming that acceptance of the Proposition will lead to a series of developments that result in an undesirable outcome.[145] To avoid the undesirable outcome, it is argued that the first step should be rejected. Stated in symbolic terms, a slippery slope argument takes the form of Modus Tollens:

$A \rightarrow B, B \rightarrow C, C \rightarrow D, D \rightarrow E; \neg E; \therefore \neg A.$

Slippery Slope Arguments are fallacious whenever the proponent fails to establish that each step of the claimed sequence of events necessarily follows. Not all slippery slope arguments are fallacious. For example, German theologian Martin Niemöller, who criticized Hitler and was arrested, but survived Sachsenhausen and Dachau, famously said:

"THEY CAME FIRST for the Communists, and I didn't speak up because I wasn't a Communist.
THEN THEY CAME for the trade unionists, and I didn't speak up because I wasn't a trade unionist.
THEN THEY CAME for the Jews, and I didn't speak up because I wasn't a Jew.
THEN THEY CAME for me and by that time no one was left to speak up . . . ."

The Conclusion of this Slippery Slope Argument is that, to avoid their coming for you, you should stand up for the first group they come to take away.

Another Slippery Slope Argument was powerfully stated by Justice Robert Jackson in *West Virginia State Board of Education v. Barnette*, 319 U.S. 624, 640-41 (1943), the Jehovah's Witness children flag salute case, handed down during World War II, shortly after American and British soldiers pushed the German and Italian armies out of North Africa but before the Allied invasion of Sicily:

> National unity as an end which officials may foster by persuasion and example is not in question. The problem is whether under our Constitution compulsion as here employed is a permissible means for its achievement.
>
> Struggles to coerce uniformity of sentiment in support of some end thought essential to their time and country have been waged by many good as well as by evil men. Nationalism is a relatively recent phenomenon but at other times and places the ends have been racial or territorial security, support of a dynasty or regime, and particular plans for saving souls. As first and moderate methods to attain unity have failed, those bent on its accomplishment must resort to an ever-increasing severity. As governmental pressure toward unity becomes greater, so strife becomes more bitter as to whose unity it shall be. Probably no deeper division of our people could proceed from any provocation than from finding it necessary to choose what doctrine and whose program public educational officials shall compel youth to unite in embracing. Ultimate futility of such attempts to compel coherence is the lesson of every such effort from the Roman drive to stamp out Christianity as a disturber of its pagan unity, the Inquisition, as a means to religious and dynastic unity, the Siberian exiles as a means to Russian unity, down to the fast failing efforts of our present totalitarian enemies. Those who begin coercive elimination of dissent soon find themselves exterminating dissenters. Compulsory unification of opinion achieves only the unanimity of the graveyard.
>
> It seems trite but necessary to say that the First Amendment to our Constitution was designed to avoid these ends by avoiding these beginnings.

Slippery Slope Arguments have been studied in the legal literature.[146]

15. Begging the Question. Identified by Aristotle, "Begging the Question," also called "Circular Reasoning," is an Argument in which the Proposition assumes the truth of what it purports to prove. Stated differently, it is a Proposition that states the Conclusion (sometimes in different words) as support for the Conclusion. In *Prior Analytics*, Book II, xvi, Aristotle wrote that--

> begging the question is proving what is not self-evident by means of itself... either because predicates which are identical belong to the same subject, or because the same predicate belongs to subjects which are identical.

Example:

Q. Why do you keep snapping your fingers?
A. To keep away elephants.
Q. But there are no elephants around here.
A. That's because I'm snapping my fingers.

16. Circular Reasoning. See "Begging the Question."

17. Changing the Premises. The Fallacy of Changing the Premises occurs when, in the first part of an Argument a Premise is assumed or proved, and in the second part of the Argument another Premise is substituted that resembles the first closely enough to be mistaken for it. This can occur when a Premise is originally asserted with a qualification, but in the process of making the Argument the qualification is forgotten. It can also occur when an unstated limitation or condition is necessary to the truth of the Proposition, but is forgotten when that Proposition is employed as a Premise.[147]

B. FALLACIES OF INDUCTIVE REASONING. Inductive Reasoning offers specific instances as evidence of a general rule. For example, because all swans known to Europeans were white, it was concluded that all swans are white. In 1697, a Dutch explorer found black swans on the Swan River in Australia. In this instance, reasoning from all known examples to a universal rule turned out to be fallacious.

1. Hasty Generalization. Alexandre Dumas, fils, said: "All generalizations are dangerous, even this one." Hasty Generalization is inferring a conclusion about an entire class of things based on knowledge of an inadequate number of class members. Stated differently, a Hasty Generalization is an unwarranted Conclusion that a sample of a population is representative of the entire population, so that qualities of the sample suggest identical qualities of the general population. This fallacy is also called the "Law of Small Numbers." A Hasty Generalization can be refuted by finding counter-examples.

2. Fallacies of Distribution. The Fallacy of Distribution is a logical Fallacy that results from ignoring the difference between the distributive sense of a term (referring to each member of a class) and the collective sense of that term (referring to the class as a whole). This can be either the Fallacy of Composition of the Fallacy of Division. Some writers associate this Fallacy with what is called the "Representativeness Hueristic," which refers to the common inclination to assess the probability of something unfamiliar by comparing it to the probability of a familiar but different proposition.

a. Fallacy of Composition. Aristotle identified the Fallacy of Composition, which occurs when you infer that something that is true of a part is also true of the whole. The Fallacy of Composition is similar to Hasty Generalization, in that Hasty Generalization is the error of attributing the qualities of a small portion of a group to the entire group. Another Fallacy of Composition is the Fallacy of Anecdotal Evidence, where a specific instance is used to refute a claim that is usually true.

b. Fallacy of Division. Aristotle identified the Fallacy of Division, which occurs when you assume that what is true of the whole is also true of a part of the whole.

3. Dicto Simpliciter. The Fallacy of Dicto Simpliciter occurs when an acceptable exception is ignored or eliminated. There are two forms: Accident (ignoring an acceptable exception) and

Converse Accident (eliminating or simplifying an acceptable exception).

4. False Cause. The False Cause Fallacy occurs when an argument attributes a causal linkage between events or conditions when the link has not been proved. The Fallacy can take several forms. It can occur when a cause is confused with an effect (Non Causa Pro Causa).

Another example is the Fallacy of Ignoring a Common Cause. This Fallacy occurs when it is wrongly believed that A causes B when in reality both A and B are caused by an independent cause, which is C.[148]

Another example is the Post Hoc Ergo Propter Hoc Fallacy. The "Post Hoc Fallacy" is inferring that, because A precedes B, A must cause B.

The Post Hoc Fallacy was addressed in *Guevara v. Ferrer*, 247 S.W.3d 662, 667-68 (Tex. 2007), where the issue was whether the plaintiff had established, in the absence of expert testimony, that medical expenses of over $1 million were caused by an automobile accident. The Court said:

> *Daubert* and *Robinson* require trial judges to scrutinize evidence for reliability. *Robinson*, 923 S.W.2d at 554. Most federal courts that have considered the issue after *Daubert* have concluded that temporal proximity alone does not meet standards of scientific reliability and does not, by itself, support an inference of medical causation. *See, e.g., McClain v. Metabolife Int'l, Inc.*, 401 F.3d 1233, 1243 (11th Cir.2005) (concluding that a temporal relationship does not, by itself, establish causation, and rejecting "the false inference that a temporal relationship proves a causal relationship"); *Rolen v. Hansen Beverage Co.*, 193 Fed. Appx. 468, 473 (6th Cir. 2006); . . . ; *see also Roche v. Lincoln Prop. Co.*, 278 F.Supp.2d 744, 764 (E.D. Va. 2003) ("An opinion based primarily, if not solely, on temporal proximity does not meet Daubert standards."); *In re Breast Implant Litig.*, 11 F.Supp.2d 1217, 1238-39 (D. Colo. 1998) ("[A] temporal relationship by itself, provides no evidence of causation.... The fact of a temporal relationship establishes nothing except a relationship in time. Proof of a temporal relationship merely suggests the possibility of a causal connection and does not assist Plaintiffs in proving medical causation."); *Schmaltz v. Norfolk & W. Ry.*, 878 F.Supp. 1119, 1122 (D.Ill. 1995) ("It is well settled that a causation opinion based solely on a temporal relationship is not derived from the scientific method and is therefore insufficient to satisfy the requirements of [Rule] 702."). One federal court noted the importance of focusing on scientific reliability to ensure "that decision makers will not be misled by the post hoc ergo propter hoc fallacy--the fallacy of assuming that simply because a biological injury occurred after a spill, it must have been caused by the spill." *Ohio v. U.S. Dep't of the Interior*, 880 F.2d 432, 473 (D.C.Cir. 1989). This is not to say that evidence of temporal proximity, that is, closeness in time, between an event and subsequently manifested physical conditions is irrelevant to the causation issue. Evidence of an event followed closely by manifestation of or treatment for conditions which did not appear before the event raises suspicion that the event at issue caused the conditions. But suspicion has not been and is not legally sufficient to support a finding of legal causation. When evidence is so weak as to do no more than create a surmise or suspicion of the matter to be proved, the evidence is "no more than a scintilla and, in legal effect, is no evidence." *Ford Motor Co. v. Ridgway*, 135 S.W.3d 598, 601 (Tex.2004). Nevertheless, when combined with other causation evidence, evidence that conditions exhibited themselves or were diagnosed shortly after an event may be probative in determining causation. *See, e.g., Westberry v. Gislaved Gummi AB*, 178 F.3d 257, 265 (4th Cir.1999) . . . .
>
> Undoubtedly, the causal connection between some events and conditions of a basic nature (and treatment for such conditions) are within a layperson's general experience and common sense. This conclusion accords with human experience, our prior cases, and the law in other states where courts have held that causation as to certain types of pain, bone fractures, and

> similar basic conditions following an automobile collision can be within the common experience of lay jurors. . . . thus, non-expert evidence alone is sufficient to support a finding of causation in limited circumstances where both the occurrence and conditions complained of are such that the general experience and common sense of lay persons are sufficient to evaluate the conditions and whether they were probably caused by the occurrence. . . . [Footnotes omitted]

5. Suppressed Evidence. The Fallacy of Suppressed Evidence occurs when a person omits relevant data. The Fallacy is hard to detect since it is difficult to detect omitted data.

6. Overwhelming Exception. The Fallacy of the Overwhelming Exception is an accurate generalization that is so reduced in force by exceptions as to be much less impressive than what might be assumed.[149] "Many forms of Government have been tried, and will be tried in this world of sin and woe. No one pretends that democracy is perfect or all-wise. Indeed it has been said that democracy is the worst form of Government except for all those other forms that have been tried from time to time.…" Winston Churchill.

7. Common Statistical Fallacies. Reasoning based on statistical analysis is a form of Inductive Reasoning. There are a number of misconceptions that can arise about statistical evidence. Some relate to flaws in the selection of the statistical sample, or the failure to screen out extraneous factors that might influence results. Others relate to the drawing of Invalid or Unsound conclusions from the statistical data.

a. Errors in Generating Statistics.

(1) Sampling Bias. Sampling Bias occurs when the person who is selecting examples to analyze unknowingly assembles a group of examples that is not representative of the entire group of cases. Sampling Bias can introduce unrecognized factors in the study that invalidate the conclusions derived from the results of the study. In Inductive Logic, Sampling Bias is a form of Fallacy of Composition, or assuming that a part is representative of the whole. This is also called the Fallacy of Biased Sample. Drawing samples at random is a way to avoid this Fallacy.

b. Errors in Interpreting Statistics.

(1) Fallacy of Small Sample. The Fallacy of the Small Sample occurs when the sample size is too small to justify the conclusion drawn. This is a form of the inductive Fallacy of Hasty Generalization.

(2) Base Rate Fallacy. The Base Rate is the prior probability of an event or condition, determined before new information is acquired. The Base Rate Fallacy (Ignoring the Base Rate) occurs when the Conditional Probability of a hypothesis (H) given some evidence (E) is assessed without taking into account the "base rate" or "prior probability" of H and the total probability of evidence E. The Fallacy is also expressed as the erroneous assumption that "$p(x|y) = p(y|x)$, or that the probability of x given y is equal to the probability of y given x.[150]

(3) Ignoring Regression to the Mean. "Regression to the mean" is the tendency of an event that is an outlier to be followed by an event much closer to the norm. It is erroneous to assume that one unusual event establishes a trend away from the norm.

(4) Conjunction Fallacy. The Conjunction Fallacy is a belief that the likelihood of two events occurring together is greater than the likelihood of either event occurring alone. In actuality, the probability of two events occurring together can never exceed the probability of the least likely event occurring alone. In a famous psychological study published in 1983, participants were told about a woman named Linda. "As a student, she was deeply concerned with issues of discrimination and social justice, and participated in anti-nuclear demonstrations." Participants were then asked to rank eight statements (e.g., "Linda is active in the feminist movement," "Linda is a bank teller," "Linda is a bank teller and is active in the feminist movement"), based on probability.

If reasoning correctly, the participant would know that the probability of a conjunction of two outcomes cannot exceed the probability of each outcome standing alone. Eighty percent of the participants found it more likely that Linda was both a feminist and a bank teller than that she was a feminist alone or a bank teller alone.[151] The psychologists gave the test to Stanford undergraduates, graduate students in psychology, and doctoral candidates in the decision science program, and found that 85-89% of the participants committed the Conjunction Fallacy.[152] Giving additional explanation did not greatly improve scores.[153]

(5) Gambler's Fallacy. Given a series of identical events (a "streak") and the necessity to make a choice as to the next outcome, people must make one of three possible inductions: (1) that the streak is irrelevant, (2) that the streak will continue, or (3) that the streak will stop.[154] Those who opt for option (1), expect the next outcome to be unaffected by the past outcomes. For them, the probability of the next outcome is the base rate probability calculated before the first outcome. Option (2) is sometimes called the "Hot Hand" phenomenon, based on a psychological study of persons watching basketball. Psychologists noted that basketball fans believe it more likely that a streak of a baskets will continue while a streak of misses will come to an end.[155] Option (3) is called the Gambler's Fallacy, based on the noted proclivity of gamblers to keep on betting even when they have been losing. While the odds at the outset of ten losing hands in a row is low, after the ninth hand the odds of a losing hand are the same as after the eighth hand or before the first hand. It has been suggested that the Gambler's Fallacy arises from the Representativeness Heuristic leading people to believe in a "law of small numbers." People expect a sequence of events to be representative of overall probability, and that an unlikely streak of one type of outcomes must quickly end and be evened out by other events. That principle, however, would not readily explain the Hot Hand phenomenon. Another explanation would be that people who opt for (2) or (3) do not believe that the outcomes are random. When events are not in fact random, then following streaks may yield better outcomes than disregarding streaks.[156] This points up the fact that the Fallacy is only fallacious when applied to random events.

(6) Texas Sharpshooter Fallacy. The Texas Sharpshooter Fallacy describes a shooter who shoots the side of a barn and then draws the target around the place where the bullets hit. The Fallacy is an effect of the "clustering illusion," or the belief that random events that occur in clusters are not really random.

C. FALLACIES OF ANALOGICAL REASONING.

1. False Analogy. The Fallacy of Faulty Analogy occurs when one assumes that because two things being compared are similar in some known respects, that they are therefore similar in other unknown respects. Faulty Analogy is Analogical Reasoning whose inductive probability is low because the similarities relied upon to draw the connection between the Source and Target are few in number, or are tenuous, or are not relevant to the comparison. Faulty Analogy can be the basis for humorous quips. "Ancient Rome declined because it had a Senate; now what's going to happen to us with both a Senate and a House?" -- Will Rogers.

D. FALLACIES OF ARGUMENTATION.

Fallacies of Reasoning are fallacious because their underlying logic fails to adhere to the rules of Deductive or Inductive Reasoning or the principles of Analogical Reasoning. Fallacies of Reasoning are the Deductive and Inductive and Analogical Fallacies discussed above. But there are also Arguments that are fallacious because they divert the focus of the audience from the merits of the dispute to irrelevant considerations, or because of problems with word meanings, syntax, and semantics. In this Article, these latter types of argument are called "Fallacies of Argumentation." While Logical Fallacies upon close scrutiny are clearly flawed, Fallacies of Argumentation are usually right or wrong in degrees, depending on the content of the Argument and the context of the Argument.[157]

Spotting Fallacies of Argumentation in everyday Arguments is sometimes difficult because many of these fallacious techniques are so familiar that we have become used to them. The best antidote is to become familiar with a list of Fallacies of Argumentation, to be better able to spot one when it arises. Sometimes fallacious Arguments are made out of ignorance. However, many fallacious Arguments are used precisely because they are effective in obscuring the merits of an Argument. Since the goal of argumentation is persuasion, and not adhering to Logic, many areas of discourse are prone to fallacious techniques, including political propaganda, international diplomacy, advertising, editorials, news programs that appeal to particular constituencies, and, unfortunately, legal advocacy.

There are many lists of Fallacies of Argumentation available on the worldwide web. The categories and distinction between items in lists of Fallacies are somewhat subjective and sometimes can amount to shades of grey. Latin names were introduced for many fallacious arguments in the Middle Ages, and are mentioned where applicable. The following list contains the major Fallacies of Argumentation, but by no means all of them.

1. Accent. Aristotle identified the Fallacy of Accent as the alteration of meaning resulting from changing accent marks in written Greek words. In modern English, the Fallacy of Accent refers to a situation where the meaning of a sentence can be changed by emphasizing different words.

2. Ambiguity. The Fallacy of Ambiguity, arises when a word used in an argument has more than one meaning, and the intended meaning is unclear. When someone intentionally creates an Ambiguity, in order to gain from the uncertainty of meaning, it is called "Equivocation."

The Fallacy of Ambiguity was mentioned in *Powers v. Texas Mut. Ins. Co.*, 2010 WL 337144, *4 (Tex. App.--Eastland 2010, no pet.) (memorandum opinion), the court said:

> Powers's challenge on appeal is that the blood alcohol test results should not have been admitted as evidence because there were gaps in the chain of custody; therefore, the expert opinions of Dr. Avery and Hambrick that relied on the blood sample should have been excluded. Powers cites *Gammill v. Jack Williams Chevrolet, Inc.*, 972 S.W.2d 713, 726 (Tex. 1998), for the proposition that expert testimony is unreliable if "there is simply too great an analytical gap between the data and the opinion proffered." The part of his argument that relies on *Gammill* commits the fallacy of ambiguity (equivocation). The "gap" referred to in *Gammill* is one of analytical reasoning. The "gap" challenged here is whether the chain of custody from the time the blood sample was taken until it was analyzed by Hambrick was established by the evidence; it was not a "gap" in an expert's analytical reasoning.

3. Amphiboly. Aristotle identified the Fallacy of "Amphiboly" (from the Greek "ampho," which means "double" or "on both sides"), also called "Amphibology," which occurs where an ambiguity arises not from the unclear meaning of one word, but rather from the way the words are arranged. Here are some humorous examples:

- "Toilet Out Of Order ... Please Use Floor Below"
- "Automatic Washing Machines: Please Remove All Your Clothes When The Light Goes On"
- "After Tea Break Staff Should Empty The Teapot And Stand Upside Down On The Draining Board"
- "I cannot praise her work too highly."
- "If you attack the Persians, you will destroy a mighty empire."[158]

Ambiguity and Amphiboly should be distinguished from Vagueness. Vagueness is an indistinctness of meaning.

4. Appeal to Authority (ad Verecundiam). An Appeal to Authority is an Argument that a proposition should be accepted or rejected because a person in authority has accepted or rejected the proposition. This Argument is fallacious when there is no necessary connection between who the authoritative person is and the correctness of her

views. It is not objectionable to suggest that opinions of authoritative persons support a view; the problem is in giving such opinions more credence than they deserve under the circumstances.

This technique is evident in advertising when claims are made like: "According to a nationwide survey: More doctors smoke Camels than any other cigarette;" or "Trident is so good for your teeth that 4 out of 5 dentists would recommend Trident sugarless gum for their patients who chew gum."

The Fallacy of Appeal to Authority has two manifestations. First, the person held up as an expert may have made important contributions in one field but is not an expert in the subject matter in question. Celebrity endorsements of products or services are a form of this Fallacy. On June 9, 2010, actor Kevin Costner testified to a committee of the U.S. Congress on the oil spill in the Gulf of Mexico.[159] Since 1969, more than 400 celebrities have appeared as witnesses in 288 congressional committee hearings.[160] A second problem occurs with an Appeal to Authority when the authority is an expert in the area, but his/her opinion may be flawed due to bias, corruption, inaccuracy, etc. This concern has driven the scientific research community to require disclosure of researchers' ties to parties who are financially interested in the results of the study, and to treat undisclosed connections as a scandal.

The revolution in the role of forensic experts was ushered in by the *Daubert* case,[161] which dealt with the very issues raised by this Fallacy. Experts must now back up their opinions with sufficient data and valid technique. As stated by the court in *Burrow v. Arce*[162]: "it is the basis of the witness's opinion, and not the witness's qualifications or his bare opinions alone, that can settle an issue as a matter of law; a claim will not stand or fall on the mere ipse dixit of a credentialed witness." Will Rogers put it this way: "An economist's guess is liable to be as good as anybody else's."

An Appeal to Authority is not fallacious when a legal argument relies on the authority of binding case precedent, although the Argument is fallacious if the authority is not binding because the authority is dictum, or a plurality opinion, or has been attenuated by the amendment of an underlying statute, etc.

An example is health product advertisements with actors wearing white coats and stethoscopes hanging around their necks. This appeal to authority is tacit and not explicit.

5. Appeal to Belief. An Appeal to Belief is fallacious argument that because many people believe an Argument, it must therefore be true. It takes the form: "Many people believe X; therefore, X is true". Depending on the issue, the fact that something is widely believed may make the view important for practical reasons, but doesn't establish the truth of the belief. Over history, a majority of the people have at times believed something we now know to be false, like a flat earth, or a geocentric universe, or that Columbus was the first European to discover America.

6. Appeal to Emotion. The Appeal to Emotion Fallacy occurs when an arguer appeals to the audience's emotions rather than reason in order to persuade. This Fallacy is prevalent in political speech and in commercial and political advertising. Indicators of an appeal to emotion are concepts or symbols that engender strong feelings, like patriotism, racism, religious fervor, pity, etc. Non-verbal symbols can be used as latent components of an appeal to emotion, like patriotic or religious music; national flag; religious symbol; persons of certain age, race, or gender, positioned behind the speaker's podium for effect, etc. Aristotle did not consider an appeal to emotion to be a Fallacy; for Aristotle, Pathos is a legitimate and important component of a persuasive speech. See Section V.B.

7. Appeal to Fear (ad Baculum). The Fallacy of Appeal to Fear occurs when the speaker attempts to provoke fear in support of an Argument when the fear is unrelated to the merits of the Argument.[163] It is an Argument that uses explicit or implicit threats or otherwise causes fear in

order to gain acceptance. Example: "You'd better agree with me, or else . . . ."

8. Appeal to Flattery. An Appeal to Flattery is an attempt to persuade a listener by flattering or complimenting the listener. Such an appeal is unrelated to the merits of the claim.[164]

9. Appeal to Novelty. An Appeal to Novelty occurs when it is argued that something should be accepted because it is new.[165] Just because an idea or process is new does not make it better than existing ideas or processes.

10. Appeal to Pity (ad Misericordiam). An Appeal to Pity occurs when someone tries to engender support or opposition by invoking pity among the audience.[166] The Argument is fallacious when the feeling of pity is extraneous to the merits of the argument.

11. Appeal to Ridicule. An Appeal to Ridicule, or Appeal to Mockery, is an Argument designed to persuade by ridiculing or mocking the opponent.[167]

12. Appeal to Tradition. An Appeal to Tradition is an Argument that something should be supported or rejected based on tradition, or the way things have always been done.[168]

13. Argumentum ad Hominem. An "ad Hominem" Argument is an Argument that attacks an idea by attacking its proponents on irrelevant grounds. The term "ad Hominem" means "against the man." The structure of an ad Hominem attack is:

Person A makes claim X.
Person B discredits person A.
Therefore, claim X should be rejected.

Example: unwarranted attacks on the integrity of opposing counsel are improper, and are sometimes held to be incurable error. *See Amelia's Auto., Inc. v. Rodriguez*, 921 S.W.2d 767 773-774 (Tex. App.–San Antonio 1996, no writ) (asking a party if he knew that his lawyer was a convicted felon and had been disbarred for five years for filing a frivolous lawsuit, was incurable error).

A "direct" ad Hominem attack is a personal attack on the opponent, including an attack on her/his character. The structure of the attack is: "Person A has a certain negative quality or feature; therefore, Person A's argument should be rejected." A "circumstantial" ad Hominem attack attempts to refute a claim by showing that the proponent has been inconsistent in his support of the claim.

The ad Hitlerum Fallacy is an instance of ad Hominem. Ad Hitlerum occurs when an opponent is likened to Hitler or the Nazis, as a way of discrediting his Argument. Discrediting an Argument because the proponent is of a certain race, religion, or gender, is ad Hominem.

An ad Hominem attack is legitimate when the attack targets something relevant to the merits of the Argument.

14. Argumentum Ad Hominem Tu Quoque. An "ad hominem tu quoque" attack is one that criticizes an opponent for having previously said something inconsistent, or having previously acted in a manner inconsistent with his or her current position in a dispute. The fact that the proponent previously espoused a different view doesn't establish which of the conflicting views is incorrect. Acting inconsistently may show the proponent to be a hypocrite, but it doesn't disprove the Argument itself.[169] Additionally, changing one's position, when an earlier position is no longer convincing, is a sign of good reasoning, not bad.

15. Argument From Fallacy (ad Logicano). The Fallacy of Argument From Fallacy is an Argument that, because an opponent's Argument is fallacious, it therefore follows that his/her Conclusion is false. A fallacious Argument does not prove that its Conclusion is true, but the fact it is fallacious does not establish that the Conclusion is false. You must distinguish failure to prove from disproof.

16. Argument from Ignorance (ad Ignorantiam). Argument from Ignorance is the contention that a proposition is false because it has not been proved, or is true because it has not been disproved. Example: "P is unproved; therefore, not-P is true."[170] This is a shifting of the burden of proof. This kind of reasoning is not fallacious in instances, like a trial, where the law assigns a burden of persuasion to a party and the failure to meet that burden has the effect of negating the proposition. For example, in a criminal trial the defendant is either "guilty" or "not guilty." By law, the failure of the prosecutor to prove guilt beyond a reasonable doubt results in the negative of the proposition being taken as true. Another example would be a belief that a medicine is safe because no clinical studies have demonstrated negative side-effects. If the belief is based on one study, the conclusion is strongly fallacious. As more studies are conducted, the Conclusion becomes less-and-less fallacious.[171] One psychological experiment reflects that examinees rated a conclusion based on one study to be weaker than a conclusion based on 50 studies.[172]

17. Argument From Popular Appeal (ad Populum). Arguing From Popular Appeal is claiming that someone should accept an Argument because a large number of people approve the Argument. The Argument has the form: "Most people approve of X; therefore X must be true".

18. Argument to Moderation (ad Temperantiam). Argument to Moderation, also called the Fallacy of the Middle Ground, or Fallacy of False Compromise, is accepting an Argument because it lies between two competing positions. The Fallacy has the structure: Party A and Party C are arguing two positions, position A and position C. Position B falls between A and C. Therefore, B is the correct position.[173] The flaw is in thinking that the middle ground is always preferable. Sometimes the choice really does boil down to either of two positions (i.e., a woman is either pregnant or she is not).

19. Bandwagon Effect. The Bandwagon Effect, sometimes called "Peer Pressure," is an Argument where the listener's discomfort at being left out of the group is used to persuade, rather than the merits of the argument.

20. Complex Question. Aristotle identified the "Fallacy of the Complex Question," which occurs when a question is predicated on an unstated assumption, so that any answer to the question tacitly affirms the assumption. This is sometimes called a "loaded question" or a "trick question." Example: "When did you stop beating your wife?" To meet the trick question head on, you can identify the unstated assumption and disagree with it. Sometimes a person will ask a loaded question without realizing that the question contains a false premise. In that instance the fallacy can be pointed out in a friendly way. See *The Role of Reasoning and Persuasion in the Legal Process,* Section XIV.M., distinguishing the loaded question, the leading question, rhetorical question, the speaking question, the "buttering up" question, and the "kook" question.

21. Converse Accident. Aristotle identified the "Converse Accident Fallacy" which occurs when you form a general rule based on a few cases that are not representative of the norm. It is a form of Hasty Generalization.

22. Equivocation. Aristotle identified the Fallacy of Equivocation, which occurs when someone uses the same term in different senses in an argument. When it occurs with the Middle Term of a Syllogism, it causes the Fallacy of Four Terms. See Section X.A.1**.** In George Orwell's ANIMAL FARM, once the pigs established ascendancy over the other farm animals, they avoided having to rescind the animals' motto by adding a second part, which used Equivocation: "All animals are equal. Some animals are more equal than other animals." A subtle form of Equivocation can result from "Semantic Shift," which involves slowly changing the context in which the same words are repeated so as to achieve Equivocation by treating distinct meanings of the word as equivalent. A well-known example is Marc Antony's impromptu eulogy over Julius Caesar's bloody corpse, in which he repeatedly describes Caesar's assassins as "honorable men," which

starts as a respectful and ends as a mocking epithet.[174]

23. False Compromise. The Fallacy of Compromise occurs when a position between two extremes is adopted on the assumption that both extremes must be wrong. The Compromise is fallacious because one or the other extremes may be true.

24. Genetic Fallacy. The Genetic Fallacy occurs when the support of, or opposition to, a claim is based on the source of the claim, rather than the merits of the claim. An example would be supporting an Argument by showing that it originated with a popular person, or a respected institution, etc., or discrediting an Argument based on an unpopular source.[175]

25. Guilt by Association. The Fallacy of Guilt by Association is an ad Hominem attack that a claim should be rejected because it is endorsed by unsavory characters. The form is: “People you don’t like accept claim A; therefore you should reject claim A.”

26. Insignificance. The Fallacy of Insignificance occurs when a minor point is elevated to excessive importance.

27. Irrelevant Conclusion (Ignoratio Elenchi). Identified by Aristotle, the Fallacy of Irrelevant Conclusion occurs where a proponent of a Conclusion offers an Argument that supports a different Conclusion.

28. Many Questions. The Fallacy of Many Questions occurs when a group of questions that are not logically related are presented in a group. The group of questions are difficult to remember and cause confusion as the listener struggles to make sense of the questions.

29. Misapplied Burden of Proof. The Fallacy of Misapplied Burden of Proof occurs when a contesting party is required to prove a contention when the proposing party should have the burden of proof.[176] How a burden of proof is assigned, outside of litigation, can be tricky. Usually the person who wishes to change the status quo has the burden of proof because, as a practical matter, if people are not persuaded to change they will continue to do things in the same way.

30. Misleading Vividness. The Fallacy of Misleading Vividness occurs when a single or small number of dramatic examples are given greater weight than a significant amount of contrary evidence.[177] This is also called the Fallacy of Vivid Example.

31. Moving the Goalposts. The Fallacy of Moving the Goalposts occurs when the standard for acceptance is moved to fit an Argument, either to make it acceptable or make is unacceptable.

32. No-True-Scotsman Fallacy. The No-True-Scotsman Fallacy occurs when a person makes an ad hoc adjustment to a proposition in order to keep from admitting that it is Invalid. The Fallacy was presented by British philosopher Antony Flew:

> Imagine Hamish McDonald, a Scotsman, sitting down with his Glasgow Morning Herald and seeing an article about how the "Brighton Sex Maniac Strikes Again." Hamish is shocked and declares that "No Scotsman would do such a thing." The next day he sits down to read his Glasgow Morning Herald again and this time finds an article about an Aberdeen man whose brutal actions make the Brighton sex maniac seem almost gentlemanly. This fact shows that Hamish was wrong in his opinion but is he going to admit this? Not likely. This time he says, "No true Scotsman would do such a thing."[178]

33. Poisoning the Well. The Fallacy of Poisoning the Well occurs when someone attempts to defeat an Argument by discrediting its proponent in advance of the proponent presenting the Argument.

34. Questionable Cause. The Fallacy of Questionable Cause occurs when a causal connection is asserted between A and B without sufficient justification.[179] The Post Hoc Ergo Propter Hoc

Fallacy is a specific instance of Questionable Cause, in that the Post Hoc Fallacy concludes that, because event A preceded event B, therefore event A caused event B.[180]

35. Special Pleading. The Fallacy of Special Pleading occurs when a proponent of an Argument proposes the adoption of laws or rules while exempting himself/herself from them without sufficient cause. For example, the United States Congress will sometimes exempt itself from laws it enacts that everyone else is required to obey. "Statistical General Pleading" occurs when the data are selectively reclassified or requantified to avoid or achieve a result.

36. Red Herring. A Red Herring is an irrelevant point introduced into a debate in order to divert attention from the merits being debated. The term derives from the fact that a fish, typically a herring, that has been cured in brine and heavily smoked, is reddish colored and has a pungent odor, supposedly strong enough to throw a sniffing bloodhound off the trail of its game. Red Herrings are especially effective when they trigger emotional reactions. An inappropriate analogy can be a Red Herring under the guise of an acceptable argument.

37. Relativist Fallacy. The Relativist Fallacy arises when a person rejects a proposition by asserting that it may apply to others but not to him or her, because s/he is unique. This could include the extreme position that all validity is relative. This Fallacy side-steps the validity of propositions that apply universally.

38. Repetition. The Fallacy of Repetition occurs when an Argument is repeated in order to make it seem more convincing without regard to its true merit.

39. Silence as Assent. In many situations, the failure to disagree with an assertion is perceived as assent or concurrence. While it is sometimes true that a person does not respond to an assertion because s/he agrees with it, there are many other reasons why a person may not respond. Some people may not care about the issue. Some may be afraid to speak in public. Some may want to avoid an argument. Some don't disagree in order to avoid seeming disagreeable. Others don't disagree out of courtesy to the speaker. A form of this Fallacy was described by British philosopher John Locke: "When men are established in any kind of dignity, it is thought a breach of modesty for others to derogate any way from it, and question the authority of men who are in possession of it." In law, assertion ordinarily requires a word or signifying gesture. However, equity may bind a person by her silence, if the speaker reasonably relies upon that failure to disagree, to the speaker's detriment.

40. Straw Man. The Straw Man Fallacy occurs when an advocate ignores his opponent's actual position and substitutes a weaker one that the advocate can more easily refute. Because the Argument refuted is not the genuine Argument, the Straw Man attack does not disprove the opponent's real Argument. A Straw Man attack can be effectuated by quoting an opponent's words out of context, or by choosing to respond to an adversary who has presented a weak argument for the proposition, or by attacking an over-simplified version of the Argument, or even by attacking a fictitious adversary.

41. Style Over Substance. The Fallacy of Style Over Substance occurs when an Argument is favored because it is attractively presented and not based on merit.

E. OTHER CATEGORIZATIONS OF FALLACIES. Fallacies have been described as "reasoning that is not cogent, which means reasoning that either (1) does not provide sufficiently good grounds for its conclusion; (2) employs unwarranted premises; or (3) ignores or overlooks relevant information."[181] Throughout this Article, Fallacies have been divided into two categories: Logical Fallacies and Fallacies of Argumentation, with Logical Fallacies being further subdivided into Deductive Fallacies, Inductive Fallacies, and Analogical Fallacies. Over the millennia, Fallacies have been categorized in many different ways. Aristotle categorized Fallacies in 300 B.C. Roman writers refined these categories and added more.

Fallacies were elaborated and multiplied (and given Latin names) during the Middle Ages. In 1620, Francis Bacon identified four Fallacies. In 1843, John Stuart Mill identified five categories of Fallacies. More recently, researchers using Bayesian conditional logic have evaluated the traditional Fallacies like Arguments from Ignorance, Circular Arguments, Slippery Slope Arguments, ad Populum, ad Hominem, and the like.

Some writers distinguish formal from informal Fallacies. Formal Fallacies are errors in the logical form of the Argument, while informal Fallacies are errors of reasoning that cannot easily be expressed in our system of formal logic, but are nonetheless criticized as being wrong.[182] Other writers distinguish Deductive from Inductive Fallacies, which is the approach taken in this Article.

Here are some alternative divisions of Fallacies into different categories.

1. Aristotle's Fallacies. In his book SOPHISTICI ELENCHI (Sophistical Refutations), Aristotle listed thirteen "sophistical arguments" (fallacies), and divided them into two groups: "material fallacies" and "verbal fallacies." Material Fallacies included: Accident, Ignorance of Refutation, Affirming the Consequent, Begging the Question, Converse Accident, Complex Question, Irrelevant Conclusion, Missing the Point, and False Cause. Verbal Fallacies included: Accent, Amphiboly, Equivocation, Composition and Division, and Figure of Speech.[183]

2. Francis Bacon's Fallacies. Francis Bacon perceived that the human mind had certain predispositions that could cause distortions in perceptions of the world. Bacon associated these predispositions with Fallacies, although he didn't call them Fallacies. In his 1620 book NOVUM ORGANUM, Bacon called them "idols," and he had four of them: Idols of the Tribe, Idols of the Den, Idols of the Market, and Idols of the Theater. These Fallacies were stated by Bacon as "aphorisms":

Aphorism 41: The idols of the tribe are inherent in human nature, and the very tribe or race of man. For man's sense is falsely asserted to be the standard of things. On the contrary, all the perceptions, both of the senses and the mind, bear reference to man, and not to the universe, and the human mind resembles those uneven mirrors, which impart their own properties to different objects, from which rays are emitted, and distort and disfigure them.

Aphorism 42: The idols of the den are those of each individual. For everybody (in addition to the errors common to the race of man) has his own individual den or cavern, which intercepts and corrupts the light of nature; either from his own peculiar and singular disposition, or from his education and intercourse with others, or from his reading . . . .

Aphorism 43: There are also idols formed by the reciprocal intercourse and society of man with man, which we call idols of the market, from the commerce and association of men with each other. For men converse by means of language; but words are formed at the will of the generality; and there arises from a bad and unapt formation of words a wonderful obstruction to the mind. . . .

Aphorism 44: Lastly, there are idols which have crept into men's minds from the various dogmas of peculiar systems of philosophy, and also from the perverted rules of demonstration, and these we denominate idols of the theatre. For we regard all the systems of philosophy hitherto received or imagined, as so many plays brought out and performed, creating fictitious and theatrical worlds. . . .

In Aphorism 40, Bacon wrote that these idols could be avoided by forming notions and axioms on the foundation of true induction.

3. John Stuart Mills' Fallacies. John Stuart Mill wrote that "Logic is not concerned with the false opinions which 'people' happen to entertain, but with the manner in which they come to entertain them."[184] In his book ON FALLACIES, Mill states five categories of Fallacies: (i) Fallacies *à*

priori (or Fallacies of Inspection), (ii) Fallacies of Observation, (iii) Fallacies of Generalization, (iv) Fallacies of Ratiocination, and (v) Fallacies of Confusion. Fallacies *à priori* occur with no actual inference taking place, where a person mistakenly assumes that his/her subjective awareness is a reflection of objective reality.[185] Fallacies of Observation result from error in sufficiently ascertaining the facts on which a theory is grounded.[186] Fallacies of Generalization include unverifiable generalizations, attempts to resolve into one things that are radically different, mistaking empirical for causal laws, Post Hoc Fallacy, and the Fallacy of False Analogies.[187] Fallacies of Ratiocination are arguments that rely on false Premises and those with true Premises that do not support the Conclusion. These include the failure to distinguish the contrary from the contradictory, syllogistic Fallacies, and the Fallacy of Changing the Premises.[188] Fallacies of Confusion have their source in language, whether vagueness or ambiguity, or casual associations with words, and they are misconceiving the import of the Premises, forgetting what the Premises are, and mistaking the Conclusion that is proved.[189] Mill points out, however, that the distinctions between these categories of Fallacies fail upon close inspection.

XI. ARGUMENTATION SCHEMES (DETAILED ANALYSIS). Aristotle listed common Arguments in three of his books: TOPICS, ON SOPHISTICAL REFUTATIONS, and RHETORIC.[190] In 1969, Chaim Perelman and Lucie Olbrechts-Tyteca published THE NEW RHETORIC, in which they analyzed Arguments used in the legal field and in everyday discourse.[191] Douglas Walton, a philosophy professor at the University of Winnipeg, Manitoba, Canada, is now a leading proponent of developing systematic criteria to use in identifying recurrent Arguments. Walton calls these criteria Argumentation Schemes.[192] Walton defines the term in this way: "Argumentation schemes are stereotypical patterns of defeasible reasoning that typically occur in common, everyday arguments."[193] Argumentation Schemes have also been called "paradigms of certain common types of reasoning."[194] The Argumentation Schemes have the structure of deductive reasoning, with Premises and Conclusions arranged as Syllogisms or Conditional Propositions; but in keeping with the modern trend away from formal Logic, the Argumentation Schemes are defeasible, so that a successful Argument does not require that the Premises be proven to a certainty or that the Conclusion follow by necessity from the truth of the Premises.[195] Instead of certainty, Walton suggests that when an Argumentation Scheme is successfully deployed, it thereby creates a presumption in favor of the Conclusion and shifts the burden of proof to an objecting party.[196] Walton originally proposed 29 Argumentation Schemes but he later expanded that number to 96.[197] The goal is to develop a "minimal set of exhaustive, mutually exclusive schemes."[198] One group of writers has said: "[A]rgument schemes can play two roles: (i) when constructing arguments, they provide a repertory of forms of argument to be considered, and a template prompting for the pieces that are needed; (ii) when attacking, arguments provide a set of critical questions that can identify potential weaknesses in the opponent's case."[199]

Every legal case can be viewed as one or more Argumentation Schemes. Each witness fits an Argumentation Scheme. Argumentation Schemes thus can be used to construct a legal case, or to prepare to tear one down.

A. THE STRUCTURE OF AN ARGUMENTATION SCHEME. Because Argumentation Schemes lead from Premises to Conclusions, they are Aristotelean-style inferences. According to Walton, if the audience accepts the Premises, then there is "good reason" to accept the Conclusion.[200] Walton matches to each Argumentation Scheme a set of "Critical Questions" that should be asked, either in designing a good Argument, or in attacking the Argument.[201] Walton wrote: "[W]e have two devices, schemes and critical questions, which work together. The first device is used to identify the premises and conclusion. The second one is used to evaluate the argument by probing into its potentially weak points."[202] Another argumentation theorist wrote this: "the role of … [critical questions] is to remind its user of the types of circumstances that typically derail reasoning of the pattern represented by the scheme.

The critical questions function as a check-list to help determine whether any of the standard types of excepting conditions that should cancel the default represented by the scheme are presented in that particular instance of its employment."[203]

Walton has broken down his Argumentation Schemes into broad categories: reasoning, source-based arguments, and applying rules to cases.[204] That pattern is followed in this Article. However, some of Walton's Argumentation Schemes and Critical Questions presented in this Article have been modified, and some Argument Schemes presented in this Article have been drawn from sources other than Walton. Also, over the years Walton has changed the names and sometimes the components of various Argumentation Schemes and Critical Questions, so the wording depends on the date of the publication that served as the source. Additionally, in some instances a Critical Question that does no more than challenge the truth of a Premise has been omitted on the ground that, absent a special circumstance, proving the truth of the Premise is assumed to be part of the Argumentation Scheme.

B. ARGUMENTATION SCHEMES FOR TYPES OF REASONING.

1. Deductive Reasoning. Deductive reasoning is based on the Syllogism (see Section VII.A.1, 2 & 3) or the Implication (i.e., the Conditional Proposition) (see Section VII.A.4). The three forms of Syllogism are categorical, disjunctive, and hypothetical. The two forms of Implication are Modus Ponens and Modus Tollens. Indirect Proof is a special type of deductive argument, and Reductio Ad Absurdum is a special type of Indirect Proof used often in legal arguments. These Argumentation Schemes are discussed below.

a. Categorical Syllogism. The Categorical Syllogism is discussed in Section VII.A.1. The Argumentation Scheme for the Categorical Syllogism is a Major Premise that associates a subcategory with a broader category and a Minor Premise that associates a particular thing with the subcategory. Under Deductive Logic, the particular thing is in this manner associated with the broader category.

Argumentation Scheme for Categorical Syllogism

Major Premise: All Bs are associated with category C.
Minor Premise: A is a B.
Conclusion: A is associated with category C.

Critical Questions

1. Is the Major Premise true in all instances?
2. Is the Minor Premise true to a certainty?

If the answer to both Critical Questions is "yes," then the Conclusion is deductively certain. If the answer to either Critical Question is "no," then the Conclusion is not certain, and may or may not be true, which makes the Argument Defeasible.

Argumentation Schemes reflecting defeasible Deductive Reasoning, would include:

Major Premise: Some Bs are associated with category C.
Minor Premise: A is a B.
Conclusion: A is probably/possibly associated with category C.

Or

Major Premise: All Bs are associated with category C.
Minor Premise: Some As are Bs.
Conclusion: A particular A may or may not be associated with category C.

Or

Major Premise: Bs are sometimes associated with category C.
Minor Premise: A is a B.
Conclusion: A could be associated with category C.

b. Disjunctive Syllogism. Disjunctive reasoning takes the form of identifying possible choices, and then rules them out one-by-one until only one is

left. The simplest form of disjunctive reasoning is the Disjunctive Syllogism. See Section VII.A.2.c.

Argumentation Scheme for Disjunctive Syllogism[205]

Disjunctive Premise: Either A or B.
Factual Premise: Not-A.
Conclusion: B.

Critical Questions[206]

1. Are the choices in the Disjunctive Premise mutually exclusive?
2. Do the choices in the Disjunctive Premise exhaust all possibilities?
3. Are the choices that are ruled out in fact false?

If the answer to the first two Critical Questions is "yes," then the Conclusion follows with 100% deductive certainty from the two Premises. If the answer to either of the first two Critical Questions is "no," then the Conclusion does not follow with certainty from the two Premises, which makes the Argument Defeasible.

c. Hypothetical Syllogism. A Hypothetical Syllogism is two conditional propositions combined into a chained argument. See Section VII.A.2.

Argumentation Scheme for Hypothetical Syllogism[207]

Conditional Premise 1: If A, then B.
Conditional Premise 2: If B, then C.
Factual Premise: A.
Conclusion: Therefore C.

Critical Questions[208]

1. Are the two Conditional Premises true in all instances?
2. Is the Factual Premise true to a certainty?

If the answer to the two Critical Questions is "yes," then the Conclusion follows with 100% deductive certainty from the two Premises. If the answer to either of the two Critical Questions is "no," then the Conclusion does not follow with certainty from the two Premises, which makes the Argument Defeasible.

d. Deductive Modus Ponens. Modus Ponens is discussed in Section VII.A.4.c above. Expressed syllogistically, in the Argumentation Scheme for Modus Ponens there is a Major Premise (which is the Conditional Proposition that "A implies B") and a Minor Premise (which is the factual assertion that A is true). In formal Deductive Logic, if the Major Premise is true, and the Minor Premise is also true, then the Conclusion must be true.

Argumentation Scheme for Modus Ponens[209]

Conditional Premise: If A, then B.
Factual Premise: A.
Conclusion: B.

Critical Questions[210]

1. Is the Conditional Premise true in all instances?
2. Is the Factual Premise true to a certainty?

If the answer to the two Critical Questions is "yes," then the Conclusion follows with 100% deductive certainty from the two Premises. If the answer to either of the two Critical Questions is "no," then the Conclusion does not follow with certainty from the two Premises, which makes the Argument Defeasible.

e. Deductive Modus Tollens. Modus Tollens, sometimes called the Contrapositive, is discussed in Section VII.A.4.d . Expressed syllogistically, in the Argumentation Scheme for Modus Tollens there is a Major Premises and a Minor Premise. The Major Premise is an Implication, or a Conditional Proposition, that "A implies B." The Minor Premise assumes that B is false. Therefore, under the rules of Deductive Logic, it follows that A is likewise false.

Argumentation Scheme for Modus Tollens[211]

Conditional Premise: If A, then B.
Factual Premise: Not-B.

Conclusion: Not-A.

Critical Questions[212]

1. Is the Conditional Premise true in all instances?
2. Is Factual Premise true to a certainty?

If the answer to the two Critical Questions is "yes," then the Conclusion follows with 100% deductive certainty from the two Premises. If the answer to either of the two Critical Questions is "no," then the Conclusion does not follow with certainty from the two Premises, which makes the Argument Defeasible.

f. Indirect Proof. In Logic, a direct proof is an effort to establish the Validity of a Logic Proposition by applying reasoning methods directly to the Premises, without further assumptions. An Indirect Proof establishes the Validity of a Logic Proposition indirectly. This could be, for example, by proving the Contrapositive of an Implication, which necessarily proves the Implication itself. Or it could be proof by process of elimination, through disproving all other alternatives. An example of an Indirect Proof would be to assume the negation of the Premise in question and to show that this assumption leads to a logical contradiction. Arriving at a logical contradiction disproves the Premise of the Indirect Proof (which is the negative of the original Premise). In this way, the original Premise is proven by disproving the negative of the original Premise. See Section VII.A.4.g. The logical structure of the Argument is analogous to the Modus Tollens method, where disproving the Consequent of a Conditional Proposition disproves the Antecedent. See Section VI.A.4.d. In argumentation, one form of indirect proof establishes the proponent's position by (i) assuming the opposite of what the proponent wishes to prove and (ii) showing that this assumption leads to an inconsistency or an undesirable consequence. Another indirect proof in argumentation would be to set out all options, and eliminate all but one, which is thereby proved by process of elimination. In non-mathematical argumentation, Indirect Proof can be weak, because in most instances it is possible for both the original Premise and its negation to lead to undesirable consequences ("damned if you do and damned if you don't). A variation, called Turning the Tables, is to use the opponent's Premise to construct an Argument that refutes the opponent's position, thus indirectly confirming your own Argument. Abraham Lincoln did just this to Stephen Douglas in Lincoln's famous Cooper Union speech. See *The Role of Reasoning and Persuasion in the Legal Process*, Section XXIII.A.7. The technique must be handled cautiously, since defeating the opponent's Argument does not necessarily establish that the proponent's Argument is correct. Disproving the opponent's proposition establishes your own only if the two Arguments are mutually exclusive and collectively exhaustive.

Disjunctive Syllogism is a form of indirect proof: either X or not-X; not-X; therefore, X. See Section VII.A.2.c.

Argumentation Scheme for Indirect Proof

The Original Premise: The assertion to be proved is X.
Assume the Opposite: Assume not-X is true.
Following the Inference: Not-X leads to a logical contradiction (or undesirable outcome).
Conclusion: X must be true.

Critical Questions

1. Are X and not-X mutually exclusive?
2. Do X and not-X exhaust all possibilities?
3. Is the reasoning, in going from not-X to the undesirable result, valid?

g. Reductio ad Absurdum. The Reductio ad Absurdum Argument takes the denial of the proposition to be established, and proves that this denial leads to (in Logic) a logical contradiction or (in normal argument) undesirable consequences.[213]

Argumentation Scheme for Reductio Ad Absurdum

Underlying Proposition: A is correct.

Proof Based on Negation: Not-A leads to a logical contradiction (or undesirable consequences).
Conclusion: A is correct.

Reductio ad Absurdum is patterned after Modus Tollens (i.e., "not-Q implies not-P"). It is also a form of Argument from Consequences. (See Section XI.B.4.a.).

As Reductio ad Absurdum is frequently encountered in law, it assumes, for purposes of discussion, that the principle relied upon by the opposing party is correct, then shows how this assumption leads to an absurd or undesirable result.[214] This is often done by constructing hypothetical fact situations where applying the opposing party's rule or principle would achieve an undesirable result. If the Argument is pursued further, the hypothetical is changed to be a little closer to the current situation and is tested again, and if the result reached is still undesirable, then the hypothetical can be changed to be even more similar to the current case, and so on, to get as close as possible to the current situation. The unstated rationale for Reductio ad Absurdum is that the rule or principle being proposed must be applied consistently to all possible fact scenarios. One way to circumvent the consistency requirement is to allow an exception for the extreme case. Another response to a Reductio Argument is to treat the hypothetical as being so unlikely as to be inconsequential.

Argumenation Scheme for Reductio Ad Absurdum (Legal)

Opponent's Proposal: Rule X should be adopted in the current situation.
Reducing to Absurdity: Rule X, if applied to alternate fact scenario Y, would reach an undesirable result and Rule X would be rejected.
Conclusion: To be consistent, Rule X should rejected in the current situation.

Critical Questions

1. Is Rule X characterized fairly in the Reductio Argument?
2. Is scenario Y comparable to the current situation in relevant respects?
3. Can Rule X be revised to avoid the undesirable result in scenario Y?
4. Can scenario Y be admitted as an exception to Rule X?
5. Is scenario Y too farfetched to be credible?

Critical Question 1 addresses the Straw Man Fallacy. See Section X.D.40. To be valid, the Reductio ad Absurdum Argument should use an accurate version of the opponent's rule or principle. Question 2 concerns the relevance of the alternate fact scenario used in the Reductio Argument. Question 3 reflects that a rule or principle can sometimes be revised to eliminate the undesirable result in the alternate fact scenario. Question 4 reflects that sometimes a Reductio's undesirable outcome can be eliminated by creating an exception for the alternate fact scenario. Consistent application of the underlying rule is thus abandoned, but applying the rule in the present case is saved.

2. Inductive Reasoning. Inductive Reasoning is discussed in Section VI.A.2 and VII.B.

Argumentation Scheme for Inductive Reasoning

Premise 1: Item A has quality Q.
Premise 2: Item B has quality Q.
Premise 3: Item C has quality Q.
Conclusion: All Items like A, B, and C have quality Q.

a. Argument from a Random Sample to a Population.

Representativeness Premise: The sample, chosen at random, is representative of the entire population.
Observational Premise: A certain percentage of the sample exhibits feature F.
Conclusion: The same percentage of the population exhibits feature F.

Critical Questions

1. Was the sample truly randomly selected?

2. Was the sample large enough to be statistically significant?

Critical Question 1 inquires about Sampling Bias. See Section X.B.6.a above. Critical Question 2 inquires about the Fallacy of the Small Sample. See Section X.B.6.b above.

3. Analogical Reasoning. Walton sees Argument From Analogy as involving a general Premise that two instances that have been compared are found to be similar, and a Conclusion that a feature of one instance is present in the second instance.

a. Argument From Analogy.[215] Arguments From Analogy argue from one specific case to another. Walton offers this simple version of Argument from Analogy:

Argumentation Scheme for Argument From Analogy

Similarity Premise: Generally, case C1 is similar to case C2.
Base Premise: A is true (false) in case C1.
Conclusion: A is true (false) in case C2.[216]

Walton cites Guarini's scheme, which is different in that it involves the comparison of only one feature:

Respects Premise: Case C_1 is similar to case C_2 in a certain respect.
Base Premise: A is true (false) in case C_1.
Conclusion: Support is offered for the claim that A is true (false) in case C_2.[217]

Walton offers the following scheme to reflect the relevancy requirement:

Similarity Premise: Generally, case C_1 is similar to case C_2.
Base Premise: Proposition A is true (false) in case C_1.
Relevant Similarity Premise: The similarities between C_1 and C_2 observed so far are relevant to the further similarity that is in question.
Conclusion: Proposition A is true (false) in case C_2.[218]

b. Argument From Precedent. Argument From Precedent is a form of Argument From Analogy.[219] Walton says that the most common type of Argument from Precedent occurs when a prior case that has already been decided is taken as precedent to be applied to the current case:[220]

Argumentation Scheme for Argument From Precedent

Previous Case Premise: C_1 is a previously decided case with precedential weight.
Previous Ruling Premise: In case C_1, rule R was applied and produced result F.
New Case Premise: C_2 is a new case that must be decided.
Similarity Premise: C_2 is similar to C_1 in relevant respects.
Conclusion: Rule R should be applied to C_2 to produce result F.

4. Practical Reasoning. For Walton, practical reasoning involves plausible arguments, which are neither certain (i.e., not deductive) nor probable (i.e., not inductive). Walton distinguishes probability from plausibility, in that probability is determined by collecting data and analyzing it statistically, while plausibility "is a matter of whether a statement appears to be true in a normal type of situation that is familiar."[221] Walton says that inductive arguments are based on statistically-measured probability, while plausible arguments are based on presumption.[222] To Walton, a presumption is "a qualified, tentative assumption of a proposition as true that can be justified on a practical basis, provided there is no sufficient evidence to show that the proposition is false."[223] He identifies this with "defeasability." See Sections VI.B and VIII. Walton says that plausible argumentation is "more practical in nature and is based on presumptions about the way things normally go, the way things normally appear, or practices that expedite ways of working together to perform smooth and efficient collaborative actions."[224] Walton says that plausible arguments are very useful where each individual situation is

unique and unknown, even statistically. Walton also says that plausible argumentation is "based on stereotypes, or assumptions about the way normal patterns or expectations work in practical experience."[225]

Walton includes in Practical Reasoning: Argument from Consequences, Argument from Alternatives, Argument from Waste or Sunk Costs, Argument from Threat, and Argument from Danger.

a. Argument from Consequences. An Argument from Consequences[226] takes as a Premise that an action will lead to certain consequences. If the consequences are desirable, then the Conclusion is to take the action. If the consequences are undesirable, then the Conclusion is to not take the action.

Argumentation Scheme for Argument from Consequences

Premise: Action A would lead to Consequence X.
Premise: Consequence X is desirable/undesirable.
Conclusion: Take/do not take Action A.

The same Argumentation Scheme can be applied to inaction (i.e., failing to take Action A). Where an action (or inaction) has both good and bad consequences, then the Argument from Consequences becomes less compelling. If the probability that Consequence X follows Action A is low, or unknown, then the Argument from Consequences is weak. Note that both Indirect Proof and Reductio ad Absurdum are forms of the Argument from Consequences.

Critical Questions:

1. How strong is the probability (or plausibility) that the consequences will follow the contemplated action (inaction)?
2. What evidence supports the claim that the predicted consequences will follow from the contemplated action (inaction)?
3. Are there consequences of the opposite value that should be considered?

b. Argument from Waste, or Sunk Costs Argument.

Argumentation Scheme for Argument from Sunk Costs[227]

Premise 1: If *a* stops trying to accomplish A now, all *a*'s previous efforts to accomplish A will be wasted.
Premise 2: It would be undesirable for *a*'s previous efforts to be wasted.
Conclusion: *a* ought to continue trying to accomplish A.

5. Abductive Reasoning. Abductive Reasoning was suggested by American philosopher, logician, mathematician, psychologist, scientist, and philosopher Charles Sanders Peirce in 1883 to describe the way people generate hypotheses explaining apparent correlations between certain events or conditions. Peirce was not convinced that deductive and inductive logic together captured the essence of man's apprehending the world. Peirce believed the human mind, being a product of the world, "naturally thinks somewhat after nature's pattern," and that people "often derive from observation strong intimations of truth, without being able to specify what were the circumstances we had observed which conveyed those intimations." Based on psychological studies of human perception, Peirce believed that perceiving the world gives rise to perceptual judgments that carry with them universal propositions, in a manner that is "not controllable and therefore not fully conscious." Peirce viewed those propositions as hypotheses, coming to life through "an act of insight" that arose "like a flash." Peirce named this process "hypothesis inference" (or "abductive inference"). Abductive Reasoning is discussed further in *The Role of Reasoning*, Section IX.

Walton includes, in Abductive Reasoning Argumentation Schemes, schemes for Argument from Sign and Argument from Evidence to Hypothesis.

a. Argument from Sign. Walton describes an Argument From Sign[228] as an Argument that certain evidence is an indication of some state of affairs. A commonplace would be: "Where there's

smoke there's fire." Or, in a hike through the woods, a large, fresh paw print, leading in the direction you are going, indicates that a bear has recently walked in the same direction along the trail. The inference is that you should turn back, because a bear may lie ahead. Bowdoin College Professor William T. Foster believed that Arguments from Sign are really Arguments from Example or Argument from Causal Relation.[229]

Argumentation Scheme for Argument From Sign

General Premise: Condition B is usually true when Condition A is true (i.e., A implies B).
Specific Premise: Condition A is true in this situation.
Conclusion: Condition B is probably true in this situation.

Critical Questions

1. What is the strength of the correlation between the sign and the condition signified?
2. Are there other conditions that more reliably account for the sign?

Argument from Sign is sometimes called Inference to the Best Explanation.[230] Argument from Sign is typically an evidence-accumulating argument. The methodical approach of fictional detective Sherlock Holmes exemplifies this type of reasoning. The construction of medical diagnoses exhibits this approach, as well.

6. Causal Reasoning. People frequently ascribe causes to events in their lives. Determining causation is often more complex than people realize. Cause C can be a contributing cause to Effect E, but is it a significant cause? Most causal connections are based upon an observed correlation between two events. But correlated events are not necessarily causally related. Sometimes it is not clear which of two correlated events is the cause of the other. Sometimes there is interactive causation. Also, both events may have as a common cause some third event. Lastly, sometimes causation can be complex, and an Argument may oversimplify the causal factors.[231]

a. Argument from Cause to Effect. An Argument from Cause to Effect is based on a belief that a certain cause leads to a certain effect.

Causal Premise: A causes B.
Result Premise: B is desirable (undesirable).
Conclusion: Bring about (avoid) A.

Critical Questions[232]

1. Is the proposed cause adequate to produce the effect in question?
2. Are there other possible causes sufficient to prevent the proposed cause from producing the effect in question?
3. Is there evidence tending to refute the presumption arising from the Argument from Cause to Effect?

b. Argument from Correlation to Cause. A correlation is a relationship between two or more things which tend to vary in a consistent way that cannot be explained by chance alone. Correlation suggests a possible causal relationship between the two things. Walton sees correlation as a defeasible inference, subject to refutation if more data diminishes the correlation, or reveals that the apparent correlation is just a coincidence.[233] Problems can arise when attributing a causal relationship between the two items. The primary risks in a Correlation to Cause argument are: (i) the apparent correlation may be a coincidence, (ii) the cause and effect relationship may be reversed (Y really causes X, not vice versa), and (iii) X and Y may have no cause-and-effect relationship, and the correlation results from a third factor that causes both X and Y.

Argumentation Scheme for Argument from Correlation to Cause[234]

Correlation Premise: There is a positive correlation between X and Y.
Causation Premise: The best explanation of the correlation is that X causes Y.[235]
Conclusion: X causes Y.

Critical Questions:[236]

1. What evidence is there of a correlation between X and Y?
2. Is there reason to believe that the correlation is more than a coincidence?
3. If a correlation is established, what reason is there to believe that X is a cause of Y and not vice-versa?
4. Could some third factor be the cause of both X and Y?

c. Causal Slippery Slope Argument. A Slippery Slope Argument is a chain argument, with a recursive feature that involves two or more steps in a causal chain, that leads to an undesirable outcome. See Section X.A.14. In a Causal Slippery Slope Argument, the effect of the previous cause is the cause of the next effect.

Causation Premise 1: A_1 causes A_2.
Causation Premise 2: A_2 causes A_3.
Causation Premise n: A_{n-1} causes A_n.
Ultimate Effect Premise: A_n in undesirable.
Conclusion: Avoid A_1.

(A_1 is the first cause in the chain of causes. A_{n-1} is the last cause in the chain of causes. A_n is the final effect in the chain of causes.)

C. SOURCE-BASED ARGUMENTS. Source-based Arguments derive their persuasiveness from an external source.

1. Argument From Authority. An Argument From Authority[237] derives its weight from an authoritative source.

Argumentation Scheme for Argument From Authority

The Authority Premise: Source A is a credible authority.
Assertion Premise: Source A says X is true (false).
Conclusion: X is true (false).

Critical Questions

1. What evidence supports source A's authority?
2. Did source A really say X is true (false)?
3. Are there other authoritative sources who disagree?

As to Critical Question 1, when source A's authority is not self-evident, it should be supported in the Argument. As to Critical Question 2, the proponent should support an appeal to authority by citation to the sources relied upon. This permits the reader to verify Critical Question No. 2, that the authoritative source really said what is claimed. Citations also reflect that the proponent is willing to have the appeal to authority verified, which lends credibility even if the citation is not checked. As to Critical Question 3, if there is adverse authority, it must either be ignored or explained away. Philosophy Professor David Hitchcock has written: "Authoritative reference sources differ from expert opinions in that they contain generic information, whereas expert opinions apply expertise to a particular situation."[238] In legal arguments, an authoritative source could be a constitution, statute, appellate decision, or a legal commentator.

2. Argument From Position to Know.[239] An Argument from a Position to Know is based on the proposition that a person with actual experience in a matter, or a person who has had training or has done research on a topic, is in a better position to know than a person without such exposure. Walton gives the following example:

> If one is trying to find the best way to get to City Hall in an unfamiliar city, it may be helpful to ask a passer-by. If it looks like this passer-by is familiar with the city, and she says that City Hall is 12 blocks east, it could be reasonable to accept the conclusion that City Hall is 12 blocks east.[240]

Argumentation Scheme for Argumentation From a Position to Know

Position to Know Premise: Person A is in a position to know whether X is true or false.
Assertion Premise: Person A asserts that X is true (false).
Conclusion: X may plausibly be taken to be true (false).

Critical Questions

1. Is Person A really in a position to know whether X is true (false)?
2. Is Person A an honest (trustworthy, reliable) source?
3. Did Person A assert that X is true (false)?

a. Argument From Witness Testimony. Philosophy Professor David Hitchcock wrote about witness testimony as a justification for an argument: "Personal testimony of what has been directly observed or experienced must be scrutinized in terms of the criteria for justified observation, written records, and memory . . . . For example, testimony based on distant memories is suspect if unsupported by written records made at or near the time of the observation. It is particularly important in evaluating testimony to be on guard against secondhand, thirdhand, or more distant testimony."[241]

Argumentation Scheme for Argument From Witness Testimony

Witness *a* has personal knowledge about fact A.
Witness *a* says that fact A is true (false).
Therefore, fact A is true (false).

Critical Questions

1. Does Person *a* really have personal knowledge about fact A?
2. Is Person *a* an honest (trustworthy, reliable) source?
3. Does Person *a*'s testimony establish that fact A is true (false)?
4. Is there evidence showing that Person *a* is mistaken?

b. Argument From Expert Opinion.[242] An Argument From Expert Opinion is a subspecies of an Argument From a Position to Know, in that the source is in a position to know because she is an expert.[243]

Argumentation Scheme for Argument from Expert Opinion

Premise: Expert E says that A is true (false).
Premise: Expert E is an expert in the field that A is in.
Conclusion: A is likely true (false).

Philosophy Professor David Hitchcock has listed seven conditions before an expert's opinion justifies a claim:

1) The opinion in question must belong to some subject matter in which there is expertise. An opinion can belong to an area of expertise even if the expertise is not based on formal education; there are experts on baseball and on stamps, for example.

2) The author of the opinion must have the relevant expertise. It is important to be on guard against the fallacy of 'expert fixation', accepting someone's opinion because that person is an expert, when the expertise is irrelevant to the opinion expressed.

3) The author must use the expertise in arriving at the opinion. The relevant data must have been collected, interpreted, and processed using professional knowledge and skills.

4) The author must exercise care in applying the expertise and in formulating the expert opinion.

5) The author ideally should not have a conflict of interest that could influence, consciously or unconsciously, the formulated opinion. For example, the acceptance of gifts from the sales representative of a pharmaceutical company can make a physician's prescription of that company's drug more suspect.

6) The opinion should not conflict with the opinion of other qualified experts. If experts disagree, further probing is required.

7) The opinion should not conflict with other justified information. If an expert opinion does not fit with what the reasoner otherwise knows, one should scrutinize its credentials carefully and perhaps get a second opinion.[244]

In Texas law, an Appeal to Expert Opinion is usually a Defeasible Argument, because usually an expert's opinion is not binding. *Uniroyal Goodrich Tire Co. v. Martinez*, 977 S.W.2d 328, 338 (Tex. 1998) ("The general rule is that opinion testimony, even when uncontroverted, does not bind the jury unless the subject matter is one for experts alone"). In a summary judgment proceeding, if an expert's opinion is uncontroverted, and it is on a subject matter concerning which the trier of fact must be guided solely by the opinion testimony of experts, and it is "clear, positive, and direct, otherwise credible and free from contradiction and inconsistencies, and could have been readily controverted," then the expert's opinion is conclusive. Otherwise, the expert's opinion may be sufficient to support a favorable finding in trial but the opinion is not conclusive as would be required for summary judgment.

Walton suggests six Critical Questions:[245]

Critical Questions

1. *Expertise Question*: How credible is E as an expert source?
2. *Field Question*: Is E an expert in the field that A is in?
3. *Opinion Question*: What did E assert that implies A?
4. *Trustworthiness Question*: Is E personably reliable as a source?
5. *Consistency Question*: Is A consistent with what other experts assert?
6. *Backup Evidence Question*: Is E's assertion based on evidence?

Walton has expanded the Critical Questions in the following way[246]:

1. Expertise Question: How credible is E as an expert source?
   - 1.1 What is E's name, job or official capacity, location, and employer?
   - 1.2 What degrees, professional qualifications or certification by licensing agencies does E hold?
   - 1.3 Can testimony of peer experts in the same field be given to support E's competence?
   - 1.4 What is E's record of experience, or other indications of practiced skill in S?
   - 1.5 What is E's record of peer-reviewed publications or contributions to knowledge in S?

2. Field Question: Is E an expert in the field that A is in?
   - 2.1 Is the field of expertise cited in the appeal a genuine area of knowledge, or area of technical skill that supports a claim to knowledge?
   - 2.2 If E is an expert in a field closely related to the field cited in the appeal, how close is the relationship between the expertise in the two fields?
   - 2.3 Is the issue one where expert knowledge in any field is directly relevant to deciding the issue?
   - 2.4 Is the field of expertise cited an area where there are changes in techniques or rapid developments in new knowledge, and if so, is the expert up-to-date in these developments?

3. Opinion Question: What did E assert that implies A?
   - 3.1 Was E quoted in asserting A? Was a reference to the source of the quote given, and can it be verified that E actually said A?
   - 3.2 If E did not say A exactly, then what did E assert, and how was A inferred?
   - 3.3 If the inference to A was based on more than one premise, could one premise have come from E and the other from a different expert? If so, is there evidence of disagreement between what the two experts (separately) asserted?
   - 3.4 Is what E asserted clear? If not, was the process of interpretation of what E said by the respondent who used E's opinion justified? Are other interpretations plausible? Could important qualifications be left out?

4. Trustworthiness Question: Is E personally reliable as a source?
   - 4.1 Is E biased?
   - 4.2 Is E honest?

4.3 Is E conscientious?

5. Consistency Question: Is A consistent with what other experts assert?

5.1 Does A have general acceptance in S?

5.2 If not, can E explain why not, and give reasons why there is good evidence for A?

6. Backup Evidence Question: Is E's assertion based on evidence?

6.1 What is the internal evidence the expert used herself to arrive at this opinion as her conclusion?

6.2 If there is external evidence, e.g. physical evidence reported independently of the expert, can the expert deal with this adequately?

6.3 Can it be shown that the opinion given is not one that is scientifically unverifiable?

Critical Question No. 2, is the lesson in *Broders v. Heise*, 924 S.W.2d 148, 152 (Tex. 1996) ("there is no validity, if there ever was, to the notion that every licensed medical doctor should be automatically qualified to testify as an expert on every medical question. Such a rule would ignore the modern realities of medical specialization."). In *Broders v. Heise* the Supreme Court drew the field of expertise narrowly.

In life situations, people will often rely upon an expert's opinion without going beyond Critical Question 1 (Expertise), such as a patient who visits a medical doctor and unquestioningly takes medication that the doctor prescribes, or the owner of a car who accepts an auto mechanic's statement that the water pump needs to be replaced. With a serious recommendation, like a diagnosis of cancer and a course of chemotherapy, the patient might explore Critical Question 5 (consistency), by getting a second opinion from another doctor.

The U.S. Supreme Court issued its opinion in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S. Ct. 2786, 125 L.Ed.2d 469 (1993), setting out the following criteria (*Daubert* factors) for determining the admissibility of expert testimony:

Testability: whether it [the evidence, theory or technique] can be (and has been) tested.
Error Rate: the known or potential rate of error.
Peer Review: whether the theory or technique has been subjected to peer review and publication.
General Acceptance: the "explicit identification of a relevant scientific community and an express determination of a particular degree of acceptance within that community."[247]

The Texas Supreme Court adopted the *Daubert* analysis for Texas law in *E.I. DuPont de Nemours & Co. v. Robinson*, 923 S.W.2d 549 (Tex. 1995). In that case, the Texas Supreme Court promulgated its own list of criteria for the reliability of the expert's methodology:

(i) the extent to which the theory has been or can be tested;
(ii) the extent to with the technique relies on a subjective interpretation by the expert;
(iii) whether the theory or technique has been subjected to peer review or publication;
(iv) the technique's potential rate of error;
(v) the general acceptance of the theory or technique in the scientific community; and
(vi) the nonjudicial uses to which the theory or technique has been put.

Robinson, 923 S.W.2d at 557.

Texas Rule of Civil Procedure 194.2.f (request for disclosure) and Texas Rules of Evidence 702 and 705, and Texas cases regarding the admissibility and weight of an expert's opinion, govern the admissibility of expert testimony in Texas courts. For expert testimony to be admissible in a Texas court, seven conditions must be met. Additionally, there is some ferment over the issue of whether the expert must hold a license in Texas in order to testify in a Texas court:

(1) the expert and her opinions must be timely disclosed under TRCP 194.2.f;

(2) the expert must be qualified by scientific, technical, or other specialized knowledge (TRE 702);

(3) the expert's data must provide a sufficient basis for the expert's opinion (TRE 705(c));

(4) the expert's methodology must be reliable (TRE 702);

(5) the expert's opinion must be relevant to the issue in question (TRE 702);

(6) the expert's opinion must assist the factfinder to understand the evidence or determine an issue (TRE 702); and

(7) if the expert is testifying about issues of mixed fact and law, the opinion must be relevant to the issues and based upon proper legal concepts (*Birchfield*[248]).

Critical Questions Under Texas Law

1. *Discovery Disclosure Question*: Is the discovery disclosure of E and E's opinions adequate?
2. *Qualification Question*: Is E an expert on the subject matter in question?
3. *Supporting Evidence Question*: Is E's opinion supported by adequate data?
4. *Methodology Questions*: Is E's methodology reliable?
5. *Relevance Question*: Is E's opinion relevant to the issue in question?
6. *Helpfulness Question*: Is E's opinion helpful to the fact finder?
7. *Definitional Question*: Is E using proper legal concepts?
8. *Licensure Question*: Does E meet the necessary licensing requirements, if applicable, in the State of Texas?

c. Argument From Ignorance. Argument from Ignorance is the contention that a proposition is false because it has not been proved, or is true because it has not been disproved. The Argument has been identified as a Fallacy. See Section X.D.16.

Argumentation Scheme for Argument From Ignorance[249]

Major Premise: If A were true, A would be known to be true.
Minor Premise: A is not known to be true.
Conclusion: A is false.

The Argument has a flavor of Modus Tollens about it (i.e., denying the Consequent negates the Antecedent), but the Logic is not deductive because in most instances the Conditional Proposition in the Major Premise cannot be proved to be Valid (i.e., the Consequent is true whenever the Antecedent is true).

Walton comments: "The major premise is based on the assumption that there has been a search through the knowledge base that would contain A that has supposedly been deep enough so that if A were there, it would be found."[250]

The Argument Scheme is not Fallacious if a defeasible approach is taken, by saying: "We have looked for X in enough places, without finding it, that we can safely assume that X is not there."

Critical Questions

1. How thorough was the search referred to in the Major Premise?
2. How thorough must the search be in order to support the Minor Premise?[251]
3. Is A susceptible to proof?

Critical Question 3 is not included in Walton's scheme, but it should be considered in situations where the claim is not provable (i.e., the existence of God, angels, ghosts, etc.). The absence of evidence cannot be used to justify a Claim when the Claim is not susceptible to evidentiary confirmation in the first place.

3. Arguments From Commitment. An Argument From Commitment[252] takes as a Premise a proposition to which the audience is committed, and reasons from that commitment to the Conclusion.

Argumentation Scheme for Argument From Commitment

Commitment Evidence Premise: It is shown that person *a* is committed to proposition *A*.
Linkage of Commitment Premise: Someone who is committed to proposition *A* is usually committed to proposition *B*.
Conclusion: In this instance, person *a* should be committed to proposition *B*.

Critical Questions

1. What evidence supports or contradicts the assertion that person *a* is committed to proposition *A*?
2. What evidence supports or contradicts the assertion that a person committed to proposition *A* is also committed to proposition *B*.[253]

a. Argument From Inconsistent Commitment. An Argument From Inconsistent Commitment[254] is an effort to discredit an argument suggested by a person based on the fact that the person, on a different occasion, has taken an inconsistent position. This Argument is called the Fallacy of a Circumstantial Ad Hominem Attack.

Argumentation Scheme for Argument From Inconsistent Commitment

Initial Commitment Premise: Person *a* says he is committed to proposition *A*.[255]
Opposed Commitment Premise: Other evidence shows that person *a* spoke against proposition *A* on an earlier occasion.[256]
Conclusion: Proposition *A* should be rejected.[257]

Critical Questions

1. What evidence shows that person *a* is committed to proposition *A*?
2. What evidence shows that person *a* was not committed to proposition *A* on other occasions?
3. How does this inconsistency, if shown, reflect on the validity of proposition *A*?[258]

4. Arguments Attacking Personal Credibility. Walton includes in Arguments attacking personal credibility: Argument from Allegation of Bias, Poisoning the well by Alleging Group Bias, and ad Hominem Attacks. Ad Hominem attacks are discussed below.

a. Ad Hominem Arguments. Ad Hominem Arguments are designed to discredit a Proposition by attacking the person who supports the Proposition. See Section X.D.13&14. A Direct Ad Hominem Attack is a personal attack brought against an opponent to discredit his argument. A Circumstantial Ad Hominem Attack is an effort to discredit the Argument by showing that the proponent has been inconsistent in his/her support of the argument.

Argumentation Scheme for a Direct Ad Hominem Argument

Argument Premise: Person *a* supports proposition *A*.[259]
Character Attack Premise: Person *a* is a person of bad character.
Conclusion: Proposition *A* should not be accepted.[260]

Critical Questions

1. What evidence supports or weakens the character attack?
2. Is person *a*'s character relevant to the validity of proposition *A*?

Argumentation Scheme for a Circumstantial Ad Hominem Argument

Argument Premise: *a* advocates argument α, which has proposition *A* as its conclusion.
Inconsistent Commitment Premise: *a* is personally committed to the opposite (negation) of *A*, as shown by commitments expressed in her/his personal actions or personal circumstances expressing such commitments.
Credibility Questioning Premise: *a*'s credibility as a sincere person who believes in his own argument has been put into question (by the two premises above).
Conclusion: The plausibility *a*'s argument α is decreased or destroyed.[261]

Critical Questions

1. Is there a pair of commitments that can be identified, as shown by evidence, to be commitments of *a*, and taken to show that *a* is practically inconsistent?

2. Once the practical inconsistency is identified that is the focus of the attack, could it be resolved or explained by further dialogue, thus preserving the consistency of the arguer's commitments in the dialogue, or showing that *a*'s inconsistent commitment does not support the claim that *a* lacks credibility?

3. Is character an issue in the dialogue, and more specifically, does *a*'s argument depend on his/her credibility?

4. Is the conclusion the weaker claim that *a*'s credibility is open to question or the stronger claim that the conclusion of *a* is false?[262]

Walton distinguishes the Circumstantial ad Hominem Argument from the Argument from Inconsistent Commitment:

> The important thing to recognize is that the difference between argument from inconsistent commitment and the circumstantial ad hominem argument is that the latter, but not the former, contains within it a direct ad hominem argument that is the basis of it.[263]

5. Arguments From General Acceptance. An Argument from General Acceptance seeks to justify a Claim, not on the merits of the Claim itself, but rather on the ground that the Claim should be accepted because it is a widely-held view.

a. Argument From Generally Accepted Opinion. An Appeal to Popular Opinion[264] appears on many lists of Fallacies. See Section X.D.17. If opinion polls reflect that a majority of persons believe something, then the proponent of an Argument that relies on that belief will appeal to popular opinion as evidence that the matter is true. Walton sometimes calls this Argument an Argument from Generally Accepted Opinion.

Argumentation Scheme for an Argument From Generally Accepted Opinion

General Acceptance Premise: X is generally accepted as true.
Presumption Premise: This general acceptance is a reason to favor X.
Conclusion: X is likely true.

Walton says that an Appeal to Popular Opinion is generally weaker than an Appeal to Expert Opinion. For some audiences, however, popular opinion may carry more weight than the opinion of an expert.

Critical Questions:[265]

1. What evidence, such as a poll or common knowledge, supports the claim that X is generally accepted as true?
2. Is the poll statistically valid?
3. Even if X is generally accepted, are there good reasons to doubt that X is true?

b. Argument From General Practice. Walton suggests that an Argument From Popular Practice[266] is a form of Appeal to Popular Opinion. For example, a couple is touring a foreign country, and decide to rent a bicycle. The question is whether to ride with the flow of traffic or against it. One tourist point out that other bicyclists are riding with the flow of traffic. The Argument from Popular Practice suggests that the couple should also ride with the flow of traffic.

Argumentation Scheme for Argument From Popular Practice.

Premise: X is a popular practice among those who are familiar with the matter.
Premise: The popular practice is evidence of what is proper.
Conclusion: X is the proper thing to do.

Critical Questions

1. How reliable is the evidence of general practice?

2. Is the determination of popular practice a Hasty Generalization?

D. APPLYING RULES TO CASES.

1. Arguments Based on Cases. Arguments Based on Cases seek to persuade by comparing the situation under review to another familiar situation or to a representative paradigm case, or model case, such as an example. This is a form of Analogical Reasoning.

a. Argument From Example. An Argument from Example reasons from specific instances (i.e., facts, stories, examples) to a more general principle, sometimes called a paradigm. The argument uses the inference (or in Toulmin's Model, the Warrant) that what is true of one or several specific instances is true at a general level, and therefore is true for other instances, including the case being argued. Like any generalization from specific instances, the greater the number of relevant examples, the stronger the inference that can be drawn from them. A typical response to this kind of Argument is the counter-example. Walton characterizes Argument from Example as an "inherently weak form of argumentation that does not confirm a claim conclusively, or even with probability."[267] It is a matter of degree: inferring an unlimited generalization from a single example is weaker than inferring a limited generalization from a large number of relevant examples.[268] An Argument from Example must be distinguished from using an example to illustrate a point.[269]

Argumentation Scheme for Argument From Example

In this particular case, the individual *a* has property *F* and also property *G*.

a is typical of things that have *F* and may or may not also have *G*.

Therefore, generally, if *x* has property *F*, then *x* also has property *G*.

Critical Questions[270]

1. Is the proposition presented by the example in fact true?
2. Does the example support the general claim it is supposed to be an instance of?
3. Is the example typical of the kinds of cases that the generalization ranges over?
4. How strong is the generalization?
5. Were there special circumstances present in the example that would impair its generalizability?

b. Argument From Analogy. Argument from Analogy[271] is an example of "case-based reasoning," where the analytical approach is to compare similarities and differences between two cases to see how close they are with regard to the issue in question. If the cases are close, they will be treated the same way.

Argumentation Scheme for Argument From Analogy[272]

Similarity Premise: Generally, case C_1 is similar to Case C_2 in relevant respects.
Base Premise: X is true (false) in case C_1.
Conclusion: X is therefore true (false) in case C_2.

The Argument From Analogy is Defeasible, since the relevant dissimilarities between case C_1 and case C_2 may outweigh the relevant similarities.

Critical Questions[273]

1. Are the comparison points relevant to the issue at hand?
2. Are there dissimilarities between case C_1 and case C_2 that would tend to undermine or outweigh the force of the similarities?
3. Is there a case C_3 that is similar to case C_2, but in which X is false?

Question 3 involves finding a counter-analogy to the analogy between case C_1 and case C_2. Walton considers Question 2 to be the most important in evaluating an Argument From Analogy.[274]

c. Argument From Precedent. An Argument from Precedent is the familiar Argument in law that the outcome of the current court case is

affected by, or even determined by, an earlier Court decision.

Argumentation Scheme For Argument From Precedent[275]

Previous Case Premise: C_1 is a previously decided case with precedential weight.
Previous Ruling Premise: In case C_1, rule R was applied and produced finding F.
New Case Premise: C_2 is a new case that has not yet been decided.
Similarity Premise: C_2 is similar to C_1 in relevant respects.
Conclusion: Rule R should be applied to C_2 and produce finding F.

Critical Questions[276]

1. Are there differences between C_1 and C_2 that would tend to undermine the force of the similarity cited?
2. Is A true (false) in C_1?
3. Is there some other case C_3 that is also similar to C_1, but in which A is false (true)?

2. Defeasible Rule-Based Arguments. Defeasible Rule Based Arguments include Argument from an Established Rule, Argument from an Exceptional Case, and Argument from Pleas for Excuse.

a. Argument From an Established Rule. An Argument from an Established Rule appeals to a controlling rule to justify a position. However, some rules can be supplanted by other rules, and for some rules there are exceptions.

Major Premise: In situations involving A, rule R applies and determines the outcome.
Minor Premise: This is a situation involving A.
Conclusion: Therefore rule R applies and determines the outcome of this situation.

1. Are there other established rules that might conflict with, or override, rule R?
2. Is this case an exception to rule R?

b. Argument from an Exceptional Case.

Major Premise: Generally, if an item has property F it also has property G.
Minor Premise: In this case, item *a* has property F but not property G.
Conclusion: Ths case represents an exception to the rule.

3. Verbal Classification Arguments.

a. Argument From Verbal Classification. Walton says that an Argument from Verbal Classification[277] concludes that a particular thing has a certain property because it can be classified under a broader category of things that have this quality. This is the essence of a Categorical Syllogism. See Section VI.A.1. Walton suggests that Arguments From Analogy, as used in law, are Arguments from Classification.[278]

Argumentation Scheme for Argument From Verbal Classification

Classification Premise: Items with property *F* can be classified as having property *G*.
Individual Premise: Item *a* has property *F*.
Conclusion: Item *a* has property *G*.

Critical Questions

1. What is the degree of certainty that items with property *F* also have property *G*.
2. What is the evidence for and against item *a* having property *F*?

Disputes over definitions fall into this category. Some arguments turn on whether an item fits within a particular definition, from which certain consequences flow. Parties disputing a definition are often actually attempting to include an item within a category, or to exclude it from the category, because of the consequences that flow from such a categorization. See *The Role of Reasoning and Persuasion in the Legal Process*, Section XIV.C.12.

b. Argument From Vagueness of a Verbal Classification. An Argument from Vagueness of Verbal Classification claims that, because a verbal

classification is too vague, it therefore cannot be applied.

c. Argument From Definition to Verbal Classification. A definition is a passage that explains the meaning of a word or term using other words that are more familiar. A "persuasive definition" is a definition designed to influence the audience's attitudes or feelings about the subject. See *The Role of Reasoning and Persuasion in the Legal Process*, Section XXIII.C.12. Aristotle described Reasoning from Definition as a correlation between a defined name and an explanation of that name. Viewed as an Enthymeme, the Major Premise is the defined term, and the Minor Premise is the features, or qualities, or aspects, that bring something within the scope of the definition. Walton offers this Argumentation Scheme:

Argumentation Scheme for Argument From Definition to Verbal Classification

Definition Premise: *a* fits definition D.
Classification Premise: For all *x*, if *a* fits definition D, then *x* can be classified as having property G.
Conclusion: *a* has property G.[279]

4. Chained Arguments Connecting Rules and Cases. Chained Arguments are Arguments consisting of a series of linked propositions.

a. Argument From Gradualism. An Argument from Gradualism starts with action A, and through a series of Modus Ponens steps shows that A leads to B, a horrible result. Using Modus Tollens, the arguer moves back through the chained Conditional Propositions until the initial action A is negated.[280]

b. Precedent Slippery Slope Argument. In his book SLIPPERY SLOPE ARGUMENTS, Walton describes the Precedent Slippery Slope Argument as the argument that allowing an exception to an established rule will set a dangerous precedent, and the first step in that direction will lead to a horrible result.[281] Walton offers three more forms of argument beyond this simple dangerous precedent argument. Walton offers the arbitrary results argument, where once we set the precedent there will not be a non-arbitrary and clear criterion to draw a new line.[282] A third Precedent Slippery Slope Argument asserts that, although each individual consequence from the decision may be acceptable, taken as a whole the group in its entirety is an unacceptable consequence.[283] The fourth category is that the initial precedent would grant additional authority to the decision-maker, or an institution, that would lead to a sequence of bad results.[284]

c. Slippery Slope Argument. A Slippery Slope Argument[285] is a type of Argument From Consequences, that a proposed action (or inaction) will lead to a condition that will lead to another condition that will lead to an undesirable consequence. The Slippery Slope Argument has a recursive feature that applies over and over again in a repeating process. And it concludes by working backwards from the negative result, in Modus Tollens fashion, to a negation of the proposed action (or inaction).

Argumentation Scheme for the Slippery Slope Argument

First Step Premise: The question is whether to perform action A_0.
Recursive Premise: Performing action A_0 would plausibly lead to A_1, which would plausibly lead to A_2, and so on, through A_n.
Bad Outcome Premise: A_n is an undesirable outcome.
Conclusion: Action A_0 should not be taken.

In evaluating a Slippery Slope Argument, the second Premise must be examined closely. Is the recursive process likely to occur? The maxim that "a chain is only as strong as its weakest link" comes to mind. Regarding the third Premise, is the predicted outcome really undesirable, or might it be desirable from a different perspective? For example, in raising a child, no parent wants their child to suffer pain or disappointment. But allowing the child to experience short term pain or disappointment may have the long-run benefit of teaching the child an important lesson. If the

likelihood of the ultimate outcome is uncertain at step A_0, it is important to ask whether the recursive process can be halted or altered in case the undesirable outcome does become more likely, which would allow step A_0 to be taken with relative safety.

Critical Questions[286]

1. What are all of the intervening propositions in the sequence from A_0 to A_n that are given?
2. What other steps are required to make the procession from A_0 to A_n plausible?
3. What are the weakest links in the recursive sequence, and what Critical Questions can be asked about each of those links?

The distinction between an Argument from Negative Consequences and a Slippery Slope Argument is the recursive feature of the Slippery Slope Argument, which is not present in the Argument from Negative Consequences.[287]

In his 1993 book SLIPPERY SLOPE ARGUMENTS, Walton offers six basic tactics to meet a Slippery Slope Argument.[288]

(1) The negative consequences will never come to pass; attacks the weakest link.
(2) The future is uncertain; who knows what the future may hold?
(3) Modify the goal to eliminate the negative consequences.
(4) Stress positive consequences that outweigh the negative.
(5) Choose alternative means of achieving the goal without the negative consequences.
(6) Argue that not taking the proposed action will have even greater negative consequences.

One critic of Walton's analysis of Slippery Slope Arguments, Wibren van der Burg of the University of Ulricht, who is primarily concerned with issues in Bioethics such as euthenasia, suggests that the power of Slippery Slope Arguments is often based on emotional appeal. He finds that, in biomedicine at least, Slippery Slope Arguments are often strongly dependent on controversial perceptions and constructions of reality.[289] Van der Burg's criticism should not be of Walton in particular, but rather of the exclusive focus on the rational aspects of argument that are characteristic of modern argumentation theory generally. Modern argumentation theory focuses on the Logos mode of persuasion, and doesn't so much concern itself with the Ethos and Pathos modes of persuasion identified by Aristotle. See Section V.A & B.

XII. PRIMA FACIE EVIDENCE, PRESUMPTIONS, AND THE BURDEN OF PROOF.

1. Understanding Prima Facie Evidence. Clarence Guittard, Chief Justice of the Dallas Court of Appeals, wrote this about the legal term "prima facie evidence":

> "Prima facie evidence" is a phrase with no fixed meaning. Sometimes it means evidence raising a presumption; that is, proof establishing the existence of the fact at issue as a matter of law if no opposing evidence is offered. In other contexts it means proof that merely entitles the proponent to go to the jury on the existence of the fact at issue if no opposing proof is offered.

Valley Forge Life Insurance Co. v. Republic National Life Insurance Co., 579 S.W.2d 271, 276 (Tex. Civ. App.—Dallas 1978, writ ref'd n.r.e.). The terms "prima facie evidence" and "prima facie case" are scattered throughout Texas statutes, rules of procedure, and case law. In recent years, legislators and courts have come to use the term "presumption" in lieu of prima facie in some instances. And the term "presumption" itself can only be understood in the context of burdens of proof, both the burden of producing evidence and the burden of persuasion.

Because of this, an appreciation of the differences between prima facie evidence, presumptions, and the burden of proof, is an advantage in formulating and attacking legal arguments. In a court case, the outcome is affected by presumptions and burdens of proof, and in some instances by the standards for a prima facie case.

As noted above, the terms "prima facie evidence" and "prima facie case" are frequently used in law, but they do not have a consistent meaning. Prima facie evidence can be:

(i) *legally sufficient* evidence that, at trial, is sufficient to require that a contention be submitted to the fact finder, meaning sufficient to overcome a directed verdict; in the event of an appeal, the prima facie evidence constitutes legally sufficient evidence, avoiding a reversal and rendition (i.e., amounts to more than a scintilla of evidence);[290]

(ii) *factually sufficient* evidence that, at trial, is not only sufficient to require submission to the fact finder, but is also sufficient to support a favorable finding, thus avoiding both a new trial and reversal and remand on appeal;

(iii) *defeasibly conclusive* evidence that, at trial, shifts the burden of producing evidence to the opposing party, so that the proponent is entitled to a directed verdict on the issue unless the opponent introduces contrary evidence; but in the face of contrary evidence, the prima facie nature of the original evidence vanishes, turning what was prima facie evidence into ordinary evidence to be weighed by the fact finder along with all other evidence. This is equivalent to a rebuttable presumption.

In *Duncan v. Butterowe, Inc*, 474 S.W.2d 619, 621 (Tex. Civ. App.–Houston [14th Dist.] 1971, no writ), the court said:

> Prima facie evidence is evidence that, until its effect is overcome by other evidence, will suffice as proof of a fact in issue. In other words, a prima facie case is one that will entitle a party to recover if no evidence to the contrary is offered by the opposite party.

This use of "prima facie evidence" fits in category (iii) above, and amounts to a rebuttable presumption.

In *Thomas v. State*, 474 S.W.2d 692, 694-695 (Tex. Crim. App. 1972), the court considered a speeding conviction where the jury was charged that driving in excess of the speed limit was "prima facie evidence that that speed is not reasonable or prudent and that it is unlawful." *Id*. at 693-94. The court reversed the conviction for failure to define the term "prima facie evidence." The court described prima facie evidence as "some evidence, if it is believed, that the accused was driving at a speed greater than was reasonable and prudent." *Id*. at 695. The court continued: "No particular weight is assigned prima facie evidence by law except that the jury may find a verdict based on it." *Id*. at 695. This use of "prima facie evidence" would fit in category (ii) above (i.e., factually sufficient).

In *Evans v. State*, 623 S.W.2d 924 (Tex. Crim. App. 1981), the court considered a Penal Code provision that possession of a gambling device is prima facie evidence of the intent to further gambling. *Id*. at 927. The court analyzed a repealed section of the Texas Penal Code describing a "prima facie case" as evidence warranting submission of the case to the jury. *Id*. at 928. The repealed Penal Code provision was a control device for the trial court that was not to be mentioned in the jury charge. *Id*. In this case, the trial court instructed the jury that possessing a gambling device (bingo cards) was prima facie evidence of the intent to further gambling. The trial court also told the jury that, if it found beyond a reasonable doubt that the defendant possessed a gambling device, then it must find, without further evidence, intent to further gambling. *Id*. at 926-27. The appellate court reversed, holding that the instruction abridged the defendants' right not to testify. *Id*. at 929. The trial court thus fit the prima facie evidence in category (iii) above, while the Court of Criminal Appeals fit the prima facie evidence referred to in the statute into category (ii).

Texas Probate Code § 52, regarding "Recorded Instruments as Prima Facie Evidence," provides:

> (a) A statement of facts concerning the family history, genealogy, marital status, or the identity

> of the heirs of a decedent shall be received in a proceeding to declare heirship, or in a suit involving title to real or personal property, as prima facie evidence of the facts therein stated, if the statement is contained in either an affidavit or any other instrument legally executed and acknowledged or sworn to before, and certified by, an officer authorized to take acknowledgments or oaths as applicable, or any judgment of a court of record, and if the affidavit or instrument has been of record for five years or more in the deed records of any county in this state in which such real or personal property is located at the time the suit is instituted, or in the deed records of any county of this state in which the decedent had his domicile or fixed place of residence at the time of his death. If there is any error in the statement of facts in such recorded affidavit or instrument, the true facts may be proved by anyone interested in the proceeding in which said affidavit or instrument is offered in evidence.

This statutory provision, which also creates exception to the heresay rule, fits within category (ii) above.

Tex. R. Civ. P. 21a governs the methods of serving on opposing counsel of pleadings, motions and other items filed in a pending lawsuit. The Rule requires an attorney to certify to the court compliance with this requirement, which typically occurs in a certificate of service. Rule 21a provides:

> . . . A certificate by a party or an attorney of record, or the return of an officer, or the affidavit of any person showing service of a notice shall be prima facie evidence of the fact of service. Nothing herein shall preclude any party from offering proof that the notice or instrument was not received, or, if service was by mail, that it was not received within three days from the date of deposit in a post office . . . , and upon so finding, the court may extend the time for taking the action required of such party . . . .

Although expressed in terms of "prima facie evidence," this Rule essentially sets out a rebuttable presumption that shifts the burden of producing evidence to the party who claims not to have received notice. *Ruiz v. Nicolas Trevino Forwarding Agency, Inc.,* 888 S.W.2d 86, 88 (Tex. App--. San Antonio 1994, no writ). The Rule itself does not make it clear whether the presumption vanishes or endures in the face of contrary evidence. However, the Supreme Court has held that the presumption vanishes as a rule of law, but the facts underlying the presumption continue to have evidentiary import. *Southland Life Ins. Co. v. Greenwade*, 159 S.W.2d 854, 857-58 (Comm'n App.1942, opinion adopted). This brings this rule within category (iii) above.

Motions for new trial after a default judgment involve prima facie proof. "The motion for new trial must allege Facts which in law would constitute a defense to the cause of action asserted by the plaintiff, and must be supported by affidavits or other evidence proving prima facie that the defendant has such meritorious defense . . . '[S]uch new trial should not be denied upon any consideration of counter-affidavits or contradictory testimony offered in resistance to such motion.'" *Ivy v. Carroll*, 407 S.W.2d 212, 214 (Tex. 1966).

Something similar occurs with the preliminary hearing required in a bill of review proceeding under *Baker v. Goldsmith*, 582 S.W.2d 404, 408-09 (Tex. 1979). The bill-of-review plaintiff must plead sworn facts showing fraud, accident, or official mistake, unmixed with the bill of review plaintiff's negligence. Then the bill-of-review plaintiff must allege a defense and "present prima facie proof to support the contention." *Id*. at 408.

> The relevant inquiry is not whether "the result would probably be different" on retrial as some Texas cases have indicated. Such a test would require the court to weigh the evidence. Rather, a prima facie meritorious defense is made out when it is determined that the complainant's defense is not barred as a matter of law and that he will be entitled to judgment on retrial if no evidence to the contrary is offered. This is a question of law for the court. . . . Prima facie

> proof may be comprised of documents, answers to interrogatories, admissions, and affidavits on file along with such other evidence that the trial court may receive in its discretion. The bill of review defendant may respond with like proof showing that the defense is barred as a matter of law, but factual questions arising out of factual disputes are resolved in favor of the complainant for the purposes of this pretrial, legal determination. If the court determines that a prima facie meritorious defense has not been made out, the proceeding terminates and the trial court shall dismiss the case. [Citations omitted]

Id. at 408-09.

2. Presumptions and Burdens of Proof. In recent years, courts and legislators have moved away from using the terms "prima facie evidence" and a "prima facie case" and have moved toward speaking in terms of "presumption" instead. In retrospect, it can be seen that the term "prima facie evidence" was sometimes used to describe what we now call a presumption, or a legally sanctioned inference. For example, a statute saying that possession of gambling paraphernalia was prima facie evidence of an intent to further gambling really meant that possession of gambling paraphernalia gave rise to a permissible inference of the intent to further gambling. The case of *Evans v. State*, discussed in the preceding subsection, noted this transition from prima facie evidence to presumption in this Section of the Texas Penal Code. Nowadays, a presumption can either (i) regulate the burden of persuasion at trial, (ii) regulate the burden of producing evidence at trial; (iii) provide a permissible inference for the fact finder, or (iv) provide a mandatory inference for the fact finder.

a. Presumptions That Fix the Burden of Persuasion. Some presumptions serve to assign the burden of persuasion. Such is the role of the presumption of innocence, that puts upon the government the burden of producing evidence and securing a finding that a crime was committed. Tex. Penal Code § 2.01. The presumption of sanity requires the defendant in a criminal proceeding to produce evidence and secure a finding of insanity based upon a preponderance of the evidence, to be acquitted from a criminal offense that has otherwise been proven. Tex. Penal Code § 2.04 & 8.01. In ordinary civil proceedings, by convention the initial burden of proof is put upon the party seeking judicial relief, who must produce evidence and persuade the fact finder to find against the defendant, if the plaintiff is to win the case. In a Texas child custody case, Tex. Fam. Code § 151.131(b) establishes a rebuttable presumption that both parents should be named managing conservators, which puts the burden of production and persuasion on the party trying to deny a parent such status. Tex. Fam. Code § 153.252 establishes a rebuttable presumption that the Standard Possession Order provides reasonable minimum possession by a non-custodial parent. Tex. Fam. Code § 154.122(a) establishes a presumption that child support set in accordance with the child support guidelines is in the best interest of the child. Tex. Fam. Code § 153.433(a)(2) establishes a presumption that a parent's decision regarding grandparent access is in the child's best interest, and casts upon the grandparent seeking access to prove that denial of grandparent access would significantly impair the child's physical health or emotional well-being. These are all instances of presumptions that fix the initial burden of proof.

The Texas Penal Code describes the role of presumptions in Tex. Penal Code § 2.05, and three judges on the Texas Court of Criminal Appeals explored the role of presumptions in criminal cases in the Plurality Opinion, the Concurring Opinion, and the Dissenting Opinion, in *Madrid v. State*, 595 S.W.2d 106 (Tex. Crim. App. 1980).

b. Burden of Producing Evidence. The party who has the initial the burden of persuasion also has the initial burden of producing evidence. That party will lose if it fails to produce the evidence necessary to require that the case be submitted to the fact-finder. In the ordinary case, when the party meets this initial burden of producing evidence, then the fact-finder must decide the case based on the evidence presented by both sides. Sometimes, however, the evidence presented will trigger a presumption that has the effect of shift-

ing the burden of producing evidence to the opposite party. In that situation, the opposite party will lose if it doesn't meet its newly-acquired burden of producing evidence. If the opposite party meets this burden to produce evidence rebutting the presumption, then it is said that the presumption "vanishes," so that the fact finder must consider both parties' evidence without a presumption.

The Texas Supreme Court described the role of presumptions in *General Motors Corporation v. Saenz*, 873 S.W.2f 353, 359 (Tex. 1993):

> The presumption [in this case] is subject to the same rules governing presumptions generally. Its effect is to shift the burden of producing evidence to the party against whom it operates. . . . Once that burden is discharged and evidence contradicting the presumption has been offered, the presumption disappears and "is not to be weighed or treated as evidence." . . . . The evidence on the issue is then evaluated as it would be in any other case. . . . The presumption has no effect on the burden of persuasion. . . . The facts upon which the presumption was based remain in evidence, of course, and will support any inferences that may be reasonably drawn from them. . . . . [Citations omitted.]

(1) Special Appearance. Making a special appearance to challenge long-arm jurisdiction involves a shifting burden of proof. In *Kelly v. General Interior Const., Inc.*, 301 S.W.3d 653, 658 (Tex. 2010), the Supreme Court said:

> Our special-appearance jurisprudence dictates that the plaintiff and the defendant bear shifting burdens of proof in a challenge to personal jurisdiction. We have consistently held that the plaintiff bears the initial burden to plead sufficient allegations to bring the nonresident defendant within the reach of Texas's long-arm statute. *See id.* at 337; *Moki Mac*, 221 S.W.3d at 574; *Am. Type Culture Collection, Inc. v. Coleman*, 83 S.W.3d 801, 807 (Tex. 2002); *BMC Software*, 83 S.W.3d at 793; *McKanna v. Edgar*, 388 S.W.2d 927, 930 (Tex. 1965). Once the plaintiff has pleaded sufficient jurisdictional allegations, the defendant filing a special appearance bears the burden to negate all bases of personal jurisdiction alleged by the plaintiff. *E.g.*, *Retamco Operating*, 278 S.W.3d at 337. Because the plaintiff defines the scope and nature of the lawsuit, the defendant's corresponding burden to negate jurisdiction is tied to the allegations in the plaintiff's pleading. [Footnote omitted.]

(2) Summary Judgment. Another example is the summary judgment process:

> In a traditional motion for summary judgment, the movant carries the burden of establishing that no material fact issue exists and that it is entitled to judgment as a matter of law. *M.D. Anderson Hosp. & Tumor Inst. v. Willrich*, 28 S.W.3d 22, 23 (Tex. 2000) (per curiam). Once the movant produces sufficient evidence conclusively establishing its right to summary judgment, the burden of proof shifts to the nonmovant to present evidence sufficient to raise a fact issue. *Centeq Realty, Inc. v. Siegler*, 899 S.W.2d 195, 197 (Tex. 1995).

General Agents Ins. Co. of America, Inc. v. El Naggar, 2011 WL 1643575, *14 (Tex. App.--Houston [14 Dist.] 2011, no pet.).

(3) Child Support for Underemployed. A burden shifting occurs in setting child support, as stated in *Iliff v. Iliff*, 2011 WL 1446725, *5 (Tex. April 15, 2011):

> A parent who is qualified to obtain gainful employment cannot evade his or her child support obligation by voluntarily remaining unemployed or underemployed. *See Eggemeyer v. Eggemeyer*, 535 S.W.2d 425, 427–28 (Tex. Civ. App.--Austin 1976), *aff'd*, 554 S.W.2d 137 (Tex. 1977). Concurrently, the court must consider "a parent's right to pursue his or her own happiness," *In re E.A.S.*, 123 S.W.3d 565, 570 (Tex. App.--El Paso 2003, pet. denied), with a parent's duty to support and provide for his or her child. The court must engage in a case-by-case determination to decide whether child support should be set based on earning

> potential as opposed to actual earnings. Once the obligor has offered proof of his or her current wages, the obligee bears the burden of demonstrating that the obligor is intentionally unemployed or underemployed. The burden then shifts to the obligor, if necessary, to offer evidence in rebuttal. [Footnote omitted]

(4) Establishing Privilege. The burden shifts in connection with asserting a privilege:

> The party claiming privilege bears the burden of producing evidence to support its contention that the documents in question qualify for the privilege claimed as a matter of law. *Id.* If the party asserting a medical records privilege submits sufficient evidence, the burden shifts to the other party to either controvert the evidence, show that the privilege was waived, or show that the documents were made in the ordinary course of business.

In re Methodist Hosp., 982 S.W.2d 112, 114 (Tex. App.--Houston [1st Dist.] 1998, orig. proceeding).

(5) Spoliation Instruction. Where a party has destroyed evidence, a court has discretion to give a spoliation instruction to the jury. In *Trevino v. Ortega*, 969 S.W.2d 950, 960 (Tex. 1998), the Supreme Court recognized two different levels of severity of such instructions:

> Depending on the severity of prejudice resulting from the particular evidence destroyed, the trial court can submit one of two types of presumptions. . . . The first and more severe presumption is a rebuttable presumption. This is primarily used when the nonspoliating party cannot prove its prima facie case without the destroyed evidence. . . . The trial court should begin by instructing the jury that the spoliating party has either negligently or intentionally destroyed evidence and, therefore, the jury should presume that the destroyed evidence was unfavorable to the spoliating party on the particular fact or issue the destroyed evidence might have supported. Next, the court should instruct the jury that the spoliating party bears the burden to disprove the presumed fact or issue. . . . This means that when the spoliating party offers evidence rebutting the presumed fact or issue, the presumption does not automatically disappear. It is not overcome until the fact finder believes that the presumed fact has been overcome by whatever degree of persuasion the substantive law of the case requires. . . . [Citations omitted.]

(6) Trespass on Real Property. There is a shifting burden when a plaintiff sues a defendant for trespassing on land:

> The courts have uniformly held that once a plaintiff proves right of ownership of the property or a lawful right of possession and an entry by the defendant, the burden of proof falls on the defendant to then plead and prove consent or license as justification for the entry.

Cain v. Rust Indus. Cleaning Servs., 969 S.W.2d 464, 470 (Tex. App.--Texarkana 1998, pet. denied).

3. The California Legislature Shines a Light on the Subject. In California Evidence Code §§ 500 - 607, the California Legislature describes the role of presumptions and inferences and burdens of proof in trials in that state:

> 550. (a) The burden of producing evidence as to a particular fact is on the party against whom a finding on that fact would be required in the absence of further evidence.
>
> (b) The burden of producing evidence as to a particular fact is initially on the party with the burden of proof as to that fact.
>
> 600. (a) A presumption is an assumption of fact that the law requires to be made from another fact or group of facts found or otherwise established in the action. A presumption is not evidence.
>
> (b) An inference is a deduction of fact that may logically and reasonably be drawn from another fact or group of facts found or otherwise established in the action.

601. A presumption is either conclusive or rebuttable. Every rebuttable presumption is either (a) a presumption affecting the burden of producing evidence or (b) a presumption affecting the burden of proof.

602. A statute providing that a fact or group of facts is prima facie evidence of another fact establishes a rebuttable presumption.

603. A presumption affecting the burden of producing evidence is a presumption established to implement no public policy other than to facilitate the determination of the particular action in which the presumption is applied.

604. The effect of a presumption affecting the burden of producing evidence is to require the trier of fact to assume the existence of the presumed fact unless and until evidence is introduced which would support a finding of its nonexistence, in which case the trier of fact shall determine the existence or nonexistence of the presumed fact from the evidence and without regard to the presumption. Nothing in this section shall be construed to prevent the drawing of any inference that may be appropriate.

605. A presumption affecting the burden of proof is a presumption established to implement some public policy other than to facilitate the determination of the particular action in which the presumption is applied, such as the policy in favor of establishment of a parent and child relationship, the validity of marriage, the stability of titles to property, or the security of those who entrust themselves or their property to the administration of others.

606. The effect of a presumption affecting the burden of proof is to impose upon the party against whom it operates the burden of proof as to the nonexistence of the presumed fact.

607. When a presumption affecting the burden of proof operates in a criminal action to establish presumptively any fact that is essential to the defendant's guilt, the presumption operates only if the facts that give rise to the presumption have been found or otherwise established beyond a reasonable doubt and, in such case, the defendant need only raise a reasonable doubt as to the existence of the presumed fact.[291]

Presumptions affecting the burden of producing evidence are listed in Sections 630-647; presumptions affecting the burden of proof (i.e., burden of persuasion) are listed in Sections 660-670.

The Hawaiian Legislature also has adopted statutory rules of evidence that grapple with presumptions and burdens of proof, similar to California's but with some important changes. The Hawaii Legislature also adopted Commentary which is helpful in understanding the way presumptions and burdens of proof operate in Hawaiian courts, and can help us to sort through our concepts here in Texas.[292]

4. The Continued Vitality of Prima Facie Evidence as a Control Device. While the modern understanding of presumptions is slowly replacing prima facie evidence as a vehicle to describe permissible and mandatory inferences, the concept of a prima facie case is still useful in describing the quantum of the evidence that entitles the proponent to have its case submitted to the fact finder. This right exists for a plaintiff seeking to establish a claim, and the right of a defendant seeking to establish an affirmative defense. The concept applies to the non-movant in a traditional summary judgment proceeding, who is entitled to a conventional trial if it can prove a prima facie case (i.e., a fact issue) through the summary judgment evidence. The prima-facie-case concept also applies to authenticating an exhibit under Tex. R. Evid. 901, where the authentication requirement is met by "evidence sufficient to support a finding that the matter in question is what its proponent claims."

[END]

1. Medieval Sourcebook: Leo I and Attila <http://www.fordham.edu/halsall/source/attila2.html> (6-20-2011)

2. Marcello Guarini, *A Defence of Non-deductive Reconstructions of Analogical Arguments*, 23 INFORMAL LOGIC 153, 157 (2004). http://www.phaenex.uwindsor.ca/ojs/leddy/index.php/informal_logic/article/download/2141/1585 (6-20-2011).

3. Jeanne Fahnestock *The Appeals: Ethos, Pathos, and Logos* <http://members.tripod.com/butler_s/f2002-1002/appeals.html> (6-20-2011).

4. Aristotle, RHETORIC <http://grammar.about.com/od/il/g/inventedethos.htm> (6-20-2011).

5. <http://grammar.about.com/od/rs/g/situatedethos.htm> (6-20-2011).

6. <http://rhetoric.byu.edu/figures/e/enthymeme.htm> (6-20-2011).

7. David Zarefsky, 2 ARGUMENTATION: THE STUDY OF EFFECTIVE REASONING 58 (2d ed. The Teaching Company 2005) <http://www.teach12.com> (6-20-2011) ["Zarefsky"].

8. See Section XII.

9. Zarefsky, p. 58.

10. Christopher W. Tindale, *Revisiting Aristotle's Topoi* <http://jakemachina.com/OSSA/pdf/740_Tindale.pdf> (6-20-2011).

11. Douglas Walton and Fabrizio Macagno, *Enthymemes, Argumentation Schemes and Topics*, LOGIQUE & ANALYSE 39, 43 (2009) <http://www.dougwalton.ca/papers%20in%20pdf/09ScmTopEnt.pdf> (6-20-2011).

12. A "maxim" is a short, pithy saying. <http://rhetoric.byu.edu> (6-20-2011).

13. An "adage" is a short, pithy saying, or traditional expression of conventional wisdom. <http://rhetoric.byu.edu> (6-20-2011).

14. "Gnome" is one of several terms describing short, pithy sayings. <http://rhetoric.byu.edu> (6-20-2011).

15. "Paroemia" is one of several terms describing short, pithy sayings. <http://rhetoric.byu.edu> (6-20-2011).

16. "Sententia" is one of several terms describing short, pithy sayings. <http://rhetoric.byu.edu> (6-20-2011).

17. *See Silva Rhetoricae (the Forest of Rhetoric)* <http://rhetoric.byu.edu> (6-20-2011).

18. John F. Sowa and Ann K. Majumdar, *Analogical Reasoning*, p. 406 <http://www.jfsowa.com/pubs/analog.htm> (6-20-2011).

19. See *The Role of Reasoning and Persuasion in the Legal Process*, Section VII.C.

20. John Nolt, Dennis Rohatyn, Achille Varzi, THEORY AND PROBLEMS OF LOGIC 92-93 (2d ed. 1998).

21. "[P]articular judgment may be derivable from rules, which in turn are derivable from principles." Framework for Critical Thinking, Appendix 4A p. 5. <http://highered.mcgraw-hill.com/sites/dl/free/0070968292/815271/smi68292_app4A.pdf> (6-20-2011).

22. P.N. Johnson-Laird & Uri Hasson, *Counterexamples in sentential reasoning*, 31 MEMORY & COGNITION 1105, 1105 & 1108 (2003) <http://www.behaviometrix.com/public_html/jh_ctxpl.pdf> (6-20-2011).

23. A Proposition or Argument is Sound when (i) it is logically Valid, and (ii) the Premise (or Antecedent) is true. If a Proposition or Argument is not Valid, or is Valid but contains a Premise that is false (i.e., pigs have wings), then the Proposition or Argument is Unsound and the truth of its Conclusion is not certain.

24. This conceptualization was taken from a letter of Charles Sanders Peirce in 1905. See *Abduction* <http://www.helsinki.fi/science/commens/terms/abduction.html> (6-20-2011).

25. <http://www.mhhe.com/mayfieldpub/ct/ch11/glossary.htm> (6-20-2011).

26. John L. Pollock, *Defeasible Reasoning* 2 < http://oscarhome.soc-sci.arizona.edu/ftp/PAPERS/Defeasible%20Reasoning-Adler&Rips.pdf> (6-20-2011).

27. William M. Grove & Martin Lloyd, *Meehl's Contribution to Clinical Versus Statistical Prediction*, 115 JOURNAL OF ABNORMAL PSYCHOLOGY 192 (2006)<http://www.psych.umn.edu/faculty/grove/114meehlscontributiontoclinical.pdf> (6-20-2011).

28. P.N. Johnson-Laird & Uri Hasson, *Counterexamples in sentential reasoning*, 31 MEMORY & COGNITION 1105, 1105 (2003) <http://www.behaviometrix.com/public_html/jh_ctxpl.pdf> (6-20-2011).

29. Hugo Mercier and Dan Sperber, *Why do humans reason? Arguments for an argumentative theory*, BEHAVIORAL AND BRAIN SCIENCES p. 15 (2010) <http://www.dan.sperber.fr/wp-content/uploads/2009/10/MercierSperberWhydohumansreason.pdf> (6-20-2011).

30. John F. Sowa and Arun K. Majumdar, *Analogical Reasoning* p. 1 <http://www.jfsowa.com/pubs/analog.htm> (6-20-2011).

31. Analogical Reasoning is also needed to fill in the gaps, or lacunae, where a case arises that was not contemplated in the language of the statute, so that the statute has to be interpreted and extended to reach the case in question.

32. Goswami,Usha, *Analogical Reasoning in Children*, pp. 5-6 <http://www.nbu.bg/cogs/personal/kokinov/COG501/Goswami.html> (6-20-2011) ["Goswami"].

33. Helmar Gust, Ulf Krumnack, Kai-Uwe Kühnberger & Angela Schwering, *Analogical Reasoning: A Core of Recognition* ¶ 3.4 <http://ifgi.uni-muenster.de/~eidueidu/gust_KIThemenheft.pdf> (6-20-2011)["Gust"].

34. Frederick Schauer, *Why Precedent in Law (and Elsewhere) is not Totally (or Even Substantially) About Analogy*, 3 PERSPECTIVES ON PSYCHOLOGICAL SCIENCE 454-460 (2008) <http://web.hks.harvard.edu/publications/getFile.aspx?Id=266> ["Schauer"] (6-20-2011).

35. Gust, ¶ 2.

36. Aristotle described analogy, in his book METAPHYSICS, as being an equality of proportions involving at least four terms, where the second is related to the first as the fourth is to the third. *See* Goswami, p 4.

37. Gust, ¶ 3.2.

38. Marcello Guarini, *A Defence of Non-deductive Reconstructions of Analogical Arguments*, 23 INFORMAL LOGIC 153, 155 (2004) <http://www.phaenex.uwindsor.ca/ojs/leddy/index.php/informal_logic/article/view/2141/1585> (6-20-2011).

39. The analogy between solar system and the atom was suggested by Ernest Rutherford in 1911, and is a famous example of the use of analogy to make complex concepts graspable. In fact, electrons are not small bodies that circle an integral nucleus, and the model is mathematically invalid; it is so well-accepted, however, that the Rutherford Model is the logo for the U.S. Atomic Energy Commission. <http://upload.wikimedia.org/wikipedia/commons/7/7c/US_Atomic_Energy_Commission_logo.jpg> (6-20-2011).

40. Dedre Gentner, *Psychology of Analogical Reasoning* p. 106, <http://groups.psych.northwestern.edu/gentner/papers/Gentner02a.pdf> ["Gentner"] (6-20-2011).

41. A famous example is August Kekulé's day-dream, of a snake turning in a circle and biting its own tail, giving him the idea that the molecular structure of benzene could be a ring of carbon atoms. *See* Keith J. Holyoak & P. Thagard, MENTAL LEAPS (1995), cited in Goswami, p. 1.

42. An example is Georges de Mestral's conceiving of Velcro hook-and-loop fasteners: after he and his dog picked up cockleburs on a hunting trip in the Alps, de Mestral examined the burs under a microscope and discovered tiny hooks that affixed to fur and clothing.

43. Keith J. Holyoak, et al., *Introduction: The Place of Analogy in Cognition* Holyoak, p. 6. <http://groups.psych.northwestern.edu/gentner/papers/HolyoakGentnerKokinov01.pdf> (6-20-2011) ["Holyoak"].

44. Holyoak, pp. 5-6.

45. Frederick Schauer, *Why Precedent in Law (and Elsewhere) is not Totally (or Even Substantially) About Analogy*, 3 PERSPECTIVES ON PSYCHOLOGICAL SCIENCE 454-460 (2008) <http://web.hks.harvard.edu/publications/getFile.aspx?Id=266> (6-20-2011).

46. Gentner, p. 106.

47. Schauer, p.3.

48. Holyoak, p. 6.

49. Gentner, p. 110.

50. James J. Gillespie, et. al, *Lessons from Analogical Reasoning in the Teaching of Negotiation* 15 NEGOTIATION JOURNAL 363 364 (1999) <http://www.mccombs.utexas.edu/faculty/Jeffrey.Loewenstein/papers/Gillespieetal%20NJ99.pdf> (6-20-2011) ["Gillespie"].

51. *Id.* p. 364.

52. *Id.* p. 365.

53. *Id.* p. 365.

54. "It often takes ten or more years of experience to become expert in a particular domain, even for an obvious genius such as Mozart." Gillespie, p. 369.

55. Gentner, p. 110; Gillespie, p. 365.

56. Gillespie, p. 369.

57. Gust ¶ 2.

58. "Analogy, in it most general sense, is this ability to think about relational patterns." Keith J. Holyoak, et al., *Introduction: The Place of Analogy in Cognition*, p.2 <http://groups.psych.northwestern.edu/gentner/papers/HolyoakGentnerKokinov01.pdf> (6-20-2011). With experience, some people progress from comparing the features of individual objects, to comparing similarities between relations in the Source and Target, to comparing the higher-order relations between relations. *Id.* p. 8.

59. Holyoak, p. 3.

60. Gust, ¶ 2.

61. Gentner, p. 108.

62. Gust, ¶ 2.

63. Gust, ¶ 2.

64. Gentner, p. 108.

65. The language in the article is drawn from, but is not a quotation from, Arthur B. Laffer, *Taxes, Depression, and Our Current Troubles*, The Wall Street Journal (9-22-2009) <http://online.wsj.com/article/SB10001424052970203440104574402822202944230.html> (6-20-2011). The matter is examined in Richard R. Orsinger, *Understanding the Economy*, Section II.G.2 <http://www.orsinger.com/PDFFiles/Understanding_the_Economy.pdf> (6-20-2011).

66. The features of the Source being compared to the Target must be relevant to the issue under consideration. For example, the fact that an apple is red and tastes delicious is no reason to conclude that a ball that is red would likewise taste delicious.

67. Dedre Gentner & Julie Colhoun, *Analogical Processes in Human Thinking and Learning*, pp. 39-40 <http://groups.psych.northwestern.edu/gentner/papers/gentner&Colhoun_2010.pdf> (6-20-2011).

68. *Id.*

69. *Id.* p. 40.

70. *Id.* p. 41.

71. *Id.* p. 41.

72. The cases could involve the same areas of the law, or the earlier case might have involved legal rules or principles that could have application to the new case.

73. One measure of whether a fact was central to the earlier decision is to change the fact and see if that changes the outcome of the former case. The same technique could be applied in comparing the facts of the new case to the old: if a pertinent fact in the new case is substituted for the equivalent fact in the former case, would it change the outcome of the former case?

74. Generally speaking, the ratio decidendi of the opinion is binding stare decisis, but the obiter dicta is not. For the distinction, see John H. Farrar, *Reasoning by Analogy in the Law*, 9 BOND L. REV. 2-3 (1997) <http://epublications.bond.edu.au/cgi/viewcontent.cgi?article=1130&context=blr> (6-20-2011).

75. Schauer, p 3.

76. The Free Dictionary by Farlex <http://www.thefreedictionary.com/simile> (6-20-2011).

77. The Free Dictionary by Farlex <http://www.thefreedictionary.com/metaphor> (6-20-2011).

78. <http://en.wikipedia.org/wiki/Simile> (6-20-2011).

79. Holyoak, p. 5.

80. Linda L. Berger, *What is the sound of a corporation speaking? How the cognitive theory of metaphor can help lawyers shape the law*, J. OF THE ASS'N OF LEGAL WRITING DIRECTORS 171 (2004) <http://www.alwd.org/LC&R/Archives/2004/pdf%20files/Berger.pdf> (6-20-2011).

81. *Id.* pp. 175–79.

82. *Id.* p. 175.

83. *Id.* pp. 175-76.

84. *Id.* pp. 176.

85. *Id.* pp. 176-177.

86. *Id.* pp. 177.

87. *Id.* pp. 177.

88. *Id.* pp. 177.

89. *Id.* pp. 205-08.

90. In fact, the rain in Spain stays mainly on the coast. *See* <http://answers.google.com/answers/threadview?id=35459> (6-20-2011).

91. H. L. A. Hart, *The Ascription of Responsibility and Rights* (1949).

92. Douglas Walton, *Visualization Tools, Argumentation Schemes and Expert Opinion Evidence in Law*, p. 10 <http://tillers.net/walton.pdf> (6-20-2011).

93. Douglas Walton, *Visualization Tools, Argumentation Schemes and Expert Opinion Evidence in Law*, p. 10 <http://tillers.net/walton.pdf> (6-20-2011).

94. *Defeasible Reasoning*, Stanford Encyclopedia of Philosophy ¶ 4.1 <http://plato.standford.edu/entries/reasoning-defeasible> (6-20-2011).

95. *Id* at ¶ 4.1.

96. David M. Godden & Douglas Walton, *Advances in the Theory of Argumentation Schemes and Critical Questions*, 27 INFORMAL LOGIC 267 (2007) p. 1 <http://www.phaenex.uwindsor.ca/ojs/leddy/index.php/informal_logic/article/view/485/453> p. 15 (6-20-2011) ["Godden"].

97. *Roberts v. Roberts*, 999 S.W.2d 424, 431 (Tex. App.--El Paso 1999, no pet.) ("Where a gift is made to the spouses jointly, each spouse retains an undivided one-half interest owned as his or her separate estate").

98. J. Anthony Blair, *The Logic of Informal Logic*, p. 1 (2007) <http://jakemachina.com/OSSA/pdf/100_Blair.pdf> (6-20-2011).

99. Paul T. Wangerin. *A Multidisciplinary Analysis of the Structure of Persuasive Arguments*, 16 HARVARD JOURNAL OF LAW & PUBLIC POLICY 195, 203 (1993).

100. Foss, Foss & Trapp, CONTEMPORARY PERSPECTIVES ON RHETORIC (2002) ch. 7 p. 11 ["Foss'].

101. Foss, p. 11.

102. In Toulmin's AN INTRODUCTION TO REASONING pp. 15-16 (1979), Toulmin distinguishes between "those universal ("field-invariant") rules of procedure that apply to rational criticism in all fields and forums, and . . . [t]hose particular ("field-dependent") rules that are appropriate in law, or science, or business, but not everywhere." *See* Ralph H. Johnson, *Toulmin's Bold Experiment*, 3 INFORMAL LOGIC 16, 18 (1980) <http://www.phaenex.uwindsor.ca/ojs/leddy/index.php/informal_logic/article/download/2787/2228> (6-20-2011) ["Johnson"].

103.Wangerin, p. 204.

104.Wangerin, p. 204.

105. Richard Nordquist, *Toulmin model* <http://grammar.about.com/od/tz/g/Toulminmodelterm.htm> (6-20-2011). Nordquist's list was edited somewhat from its original.

106. Lex Runciman, Carolyn Lengel, & Kate Silverstein, EXERCISES TO ACCOMPANY THE EVERYDAY WRITER (4th ed. Macmillan, 2009), quoted by Richard Nordquist *Toulmin model* <http://grammar.about.com/od/tz/g/Toulminmodelterm.htm> (6-20-2011). Runciman's list was edited somewhat from the original.

107. One can imagine that Toulmin's contemporaries in British philosophy had trouble accepting the idea that Toulmin was the first person since Aristotle to have a creative thought about what constitutes a persuasive argument. In contrast, many American educators whose primary focus was not philosophy had no difficulty taking Toulmin's suggestions for what they were worth.

108. "Toulmin clearly saw inference warrants as defeasible in his model of argument. He expressed the conclusion using the wording 'so, presumably', basing it on an inference containing an "unless" qualifier. Meeting the qualifier by showing that there is an exception to the warrant defeats the inference to the conclusion in Toulmin's model." Doug Walton, *Defeasible Classifications and Inferences from Definitions*, p. 2 n. 1 <http://www.dougwalton.ca/papers%20in%20pdf/10ArgClassifv.pdf> (6-20-2011), quoting Toulmin, THE USES OF ARGUMENT, pp. 103-107 (1964).

109. Toulmin, Rieke & Janik, AN INTRODUCTION TO REASONING p. 29. (1979) *See* Johnson, p. 18.

110. Toulmin, Rieke & Janik, AN INTRODUCTION TO REASONING p. 33. (1979) *See* Johnson, p. 18.

111. Susan E. Newman and Catherine C. Marshall, *Pushing Toulmin Too Far: Learning From an Argument Representation Scheme*, Xerox Palo Alto Research Center, <http://www.csdl.tamu.edu/~marshall/toulmin.pdf > (6-20-2011).

112.Wangerin, p. 204.

113. David Hitchcock, *Good Reasoning on the Toulmin Model*, p. 2 <http://www.humanities.mcmaster.ca/~hitchckd/good.pdf> (6-20-2011).

114. Stephen E. Toulmin, The Uses of Argument p. 98 (1958).

115. David Hitchcock, *Toulmin's Warrants*, p. 1 <http://www.humanities.mcmaster.ca/~hitchckd/Toulminswarrants.pdf> (6-20-2011) ["Hitchcock, *Toulmin's Warrants*"].

116. Johnson, p. 22.

117. Stephen Toulmin, Richard Rieke & Allan Janik, AN INTRODUCTION TO REASONING p. 49 (1979), quoted in Johnson, p. 22.

118. Johnson, p. 22.

119. Johnson, p. 21.

120. Hitchcock, *Toulmin's Warrants*, p. 1.

121. Johnson, p. 24, quoting AN INTRODUCTION TO REASONING p. 58.

122. Stephen E. Toulmin, THE USES OF ARGUMENT p. 69 (1958).

123. Hitchcock, *Toulmin's Warrants*, p. 1.

124. Foss, p. 11.

125. Foss, p. 11.

126. <http://www.ibiblio.org/wm/paint/auth/monet/first/impression/sunrise.jpg> (6-20-2011).

127. Foss, p. 11.

128. Hitchcock, *Toulmin's Warrants*, p. 1.

129. Johnson, p. 25, quoting AN INTRODUCTION TO REASONING p. 75.

130. "Toulmin has chosen to investigate reasoning and argumentation as processes (rather than as products) and so has devised a model for understanding them which is dialogical (rather than solopsistic) and dynamic rather than static)." Johnson, p. 17. [emphasis in the original]

131. Ambiguity is a multiplicity of meanings. Ambiguity is distinguished from vagueness. See *The Role of Reasoning*, Section XV.2. Also distinguished from Equivocation. See *The Role of Reasoning and Persuasion in the Legal Process*, Section XV.22.

132. Amphiboly is multiplicity of meaning at the sentence level. When it occurs with the Middle Term of a Syllogism, it causes the Fallacy of Four Terms. The uncertainty arising from Amphiboly has to do with the way the words are arranged. A frequent source of Amphiboly is the mixing of Universal and Particular Quantifiers in the same sentence. See *The Role of Reasoning*, Section XV.22.

133. Equivocation occurs when someone uses the same term in different senses in an argument.

134. Vagueness is an indistinctness of meaning. Vagueness is distinguished from ambiguity. See *The Role of Reasoning*, Section XX.

135. Godden, p. 7.

136. Aristotle offered three reasons to study Fallacies: such studies alert us to the different ways word can be used; by learning Fallacies in others' arguments we can better avoid them in our own; and an understanding of Fallacies contributes to building a reputation of being well-trained. SOPHISTICAL REFUTATIONS, Book 16, 175a5-17; quoted in Hans V. Hansen & Robert C. Pinto, FALLACIES: CLASSICAL AND CONTEMPORARY READINGS, p. 2 (1995).

137. See Internet Encyclopedia of Philosophy <http://www.iep.utm.edu/fallacy> (6-20-2011).

138. *Fallacies*, <http://www.iep.utm.edu/fallacy/#Four%20Terms> (6-20-2011).

139. *Four Term Fallacy,* <http://philosophy.lander.edu/logic/four_fall.html> (6-20-2011).

140. <http://www.fallacyfiles.org/undismid.html> (6-20-2011).

141. *Existential Fallacy*, <http://atheism.about.com/library/glossary/general/bldef_existenial.htm> (6-20-2011).

142. Hillary Clinton said, on September 13, 2001: "Every nation has to either be with us, or against us. Those who harbor terrorists, or who finance them, are going to pay a price." < http://www.youtube.com/watch?v=DbYGYiGjpUs> (6-20-2010).

143. In his address on September 13, 2001to a joint session of Congress, President George W. Bush said: "Either you are with us, or you are with the terrorists."

144. *Denying the correlative* <http://en.wikipedia.org/wiki/Denying_the_correlative> (6-20-2011).

145. In *U.S. v. Kincade*, 379 F.3d 813, 873 (9th Cir. 2004) (Kozinski, J., dissenting), Justice Kozinski used a slippery slope argument, that the court's condoning the government's expansive use of DNA technology would set a new baseline of acceptable abridgement of privacy rights that would become the foundation for subsequent expansion of the government's authority to intrude. His quotation: "Not only do [Fourth Amendment opinions] reflect today's values by giving effect to people's reasonable expectations of privacy, they also shape future values by changing our experience and altering what we come to expect from our government." *Id.* at 873.

146. Eugene Volokh, *The Mechanisms of the Slippery Slope*, 116 HARV. L. REV. 1026 (2003); Ruth E. Sternglantz, *Raining on the Parade of Horribles: of Slippery Slopes, Faux Slopes, and Justice Scalia's Dissent in Lawrence v. Texas*, 153 UNIV. OF PENN. L. REV. 1097 (2005).

147. John Stuart Mill, ON FALLACIES ch. 6, § 4 (1843) <http://oll.libertyfund.org/title/247/40039> (6-20-2011).

148. <http://www.nizkor.org/features/fallacies/ignoring-a-common-cause.html> (6-20-2011).

149. <http://en.wikipedia.org/wiki/Overwhelming_exception> (6-20-2011).

150. Audun Jøsang, *Conditional Reasoning with Subjective Logic*, 15 J. OF MULTIPLE-VALUED LOGIC AND SOFT COMPUTING 2, 4 (2008) <http://persons.unik.no/josang/papers/Jos2008-JMVLSC.pdf> (6-20-2011).

151. Magda Osman, *An evaluation of dual-process theories of reasoning*, 11 PSYCHONOMIC BULLETIN & REVIEW 988, 1000 (2004) <http://pbr.psychonomic-journals.org/content/11/6/988.full.pdf> (8-1-2010). British theorist Jonathan St. B.T. Evans distinguishes *dual systems* from *dual processes*, and points out that the fact that people process information in two ways does necessarily mean that they have two separate cognitive systems. In fact, he suggests, the issue of whether there is one system or are two systems for processing information is not important to researchers attempting to account for experimental results. Evans proposes two reasoning processes, one heuristic (implicit) and one analytic (explicit). Evans proposes that people heuristically use incoming information to generate a plausible model, which they stick with until there is a good reason to replace it with another. Thus, deductive reasoning, instead of being the central intellectual activity, "may be seen as no more than an analytic-level strategy that bright people can be persuaded to adopt by the use of special instructions." In his view, "[d]eductive effort,

when made, attempts to modify pragmatic processes, and not the other way around." Jonathan St. B. T. Evans, *The heuristic-analytic theory of reasoning: Extension and evaluation*, 13 PSYCHONOMIC BULLETIN & REVIEW 378 (2006) <http://pbr.psychonomic-journals.org/content/13/3/378.full.pdf> (6-20-2011).

152. *Id.*

153. *Id.*

154. Bruce D. Burns and Bryan Corpus, *Randomness and inductions from streaks: "Gambler's fallacy" versus "hot hand,"* 11 PSYCHONOMIC BULLETIN & REVIEW 179, 179 (2004). <http://www.bcs.siuc.edu/facultypages/young/JDMStuff/Burns.pdf> (6-20-2011).

155. *Id.* at 170.

156. *Id.* at 182.

157. Hugo Mercier and Dan Sperber, *Why do humans reason? Arguments for an argumentative theory*, BEHAVIORAL AND BRAIN SCIENCES p. 15 (2010) <http://www.dan.sperber.fr/wp-content/uploads/2009/10/MercierSperberWhydohumansreason.pdf> (6-20-2011).

158. According to the Greek historian Heroditus, ch. 1.91, Lydian King Croesus, sent extravagant gifts to the Oracle at Delphi, inquiring whether he should attack Cyrus the Great, founder of the Persian Empire. The Oracle responded that "if he attacked the Persians, he would destroy a mighty empire." Croesus initiated the attack, was defeated and enslaved, but blamed his decision to attack on the Oracle. Cyrus sent to Delphi for an explanation, and the Oracle said: "he ought, if he had been wise, to have sent again and inquired which empire was meant, that of Cyrus or his own; but if he neither understood what was said, nor took the trouble to seek for enlightenment, he has only himself to blame for the result." <http://www.iranchamber.com/history/herodotus/herodotus_history_book1.php> (6-20-2011).

159. *See* <http://www.huffingtonpost.com/2010/06/09/kevin-costner-testifies-b_n_606542.html> (6-20-2011).

160. "In June, 2002, Senator George Voinovich (R) – Ohio refused to attend the Senate's Environment and Public Works Clean Air Subcommittee hearing to protest the appearance of Kevin Richardson, member of the pop music group, the Backstreet Boys. According to Voinovich, 'It's just a joke to think that this witness can provide members of the United States Senate with information on important geological and water quality issues. We're either serious about the issues or we are running a sideshow.'"(Rulon 2002, 1). Christopher R. Darr & Harry C. Strine IV, *A Pentadic Analysis of Celebrity Testimony in Congressional Hearings* <http://www.kbjournal.org/darr_strine> (6-21-2011).

161. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).

162. *Burrow v. Arce*, 997 S.W.2d 229, 235 (Tex. 1999).

163. <http://www.nizkor.org/features/fallacies/appeal-to-fear.html> (6-20-2011).

164. <http://www.nizkor.org/features/fallacies/appeal-to-flattery.html> (6-20-2011).

165. <http://www.nizkor.org/features/fallacies/appeal-to-novelty.html> (6-20-2011).

166. <http://www.nizkor.org/features/fallacies/appeal-to-pity.html> (6-20-2011).

167. <http://www.nizkor.org/features/fallacies/appeal-to-ridicule.html> (6-20-2011).

168. <http://www.nizkor.org/features/fallacies/appeal-to-tradition.html> (6-20-2011).

169. <http://www.nizkor.org/features/fallacies/ad-hominem-tu-quoque.html> (6-20-2011).

170. <http://philosophy.lander.edu/logic/appendb.html> (6-20-2011).

171. Mercier, p. 15.

172. Mercier, p. 15.

173. <http://www.nizkor.org/features/fallacies/middle-ground.html> (6-20-2011).

174. <http://www.youtube.com/watch?v=esUMvBL3gnY> (6-20-2011)

175. <http://www.nizkor.org/features/fallacies/genetic-fallacy.html> (6-20-2011).

176. <http://www.nizkor.org/features/fallacies/burden-of-proof.html> (6-20-2011).

177. <http://www.nizkor.org/features/fallacies/misleading-vividness.html> (6-20-2011).

178. Antony Flew, THINKING ABOUT THINKING (1975).

179. <http://www.nizkor.org/features/fallacies/confusing-cause-and-effect.html> (6-20-2011).

180. <http://www.nizkor.org/features/fallacies/post-hoc.html> (6-20-2011).

181. Hausman, Alan, Howard Kahane, and Paul Tidman, *Logic and Philosophy: A Modern Introduction* 357 (2007), quoted in Brian Lightbody and Michael Berman, *The Metaphoric Fallacy to a Deductive Inference*, 30 INFORMAL LOGIC 185, 189 (2010) <http://www.phaenex.uwindsor.ca/ojs/leddy/index.php/informal_logic/article/download/1192/2410> (6-20-2011).

182. Internet Encyclopedia of Philosophy <http://www.iep.utm.edu/fallacy> (6-20-2011).

183. "Figures of speech" in this context related to ambiguity arising when Greek words had different cases or genders that were spelled the same way. We don't have that problem in English.

184. John Stuart Mill, A SYSTEM OF LOGIC Book 5, ch. 2, § 1 (1843) <http://oll.libertyfund.org/title/247/40031> (6-20-2011).

185. John Stuart Mill, A SYSTEM OF LOGIC Book 5, ch. 3, § 1 (1843) <http://oll.libertyfund.org/title/247/40031> (6-20-2011).

186. John Stuart Mill, A SYSTEM OF LOGIC Book 5, ch. 3, § 2 (1843) <http://oll.libertyfund.org/title/247/40031> (6-20-2011).

187. John Stuart Mill, A SYSTEM OF LOGIC Book 5, ch. 5 (1843) <http://oll.libertyfund.org/title/247/40041> (6-20-2011).

188. John Stuart Mill, A SYSTEM OF LOGIC Book 5, ch. 6 (1843) <http://oll.libertyfund.org/title/247/40041> (6-20-2011).

189. John Stuart Mill, A SYSTEM OF LOGIC Book 5, ch. 7 (1843) <http://oll.libertyfund.org/title/247/40041> (6-20-2011).

190. Douglas Walton, *Justification of Argumentation Schemes* p. 2 (2005) <http://philosophy.unimelb.edu.au/ajl/2005/2005_1.pdf> (6-20-2011).

191. *Id.* p. 2.

192. Douglas Walton, FUNDAMENTALS OF CRITICAL ARGUMENTATION 84-171 (2006) ["Walton, FUNDAMENTALS"].

193. David M. Godden & Douglas Walton, *Advances in the Theory of Argumentation Schemes and Critical Questions*, 27 INFORMAL LOGIC 267 (2007) p. 1 <http://www.phaenex.uwindsor.ca/ojs/leddy/index.php/informal_logic/article/view/485/453> (6-20-2011) .

194. Godden, p. 271.

195. Walton, FUNDAMENTALS p. 84.

196. Godden, p. 268.

197. Douglas Walton, *Argument Mining by Applying Argumentation Schemes*, 4 STUDIES IN LOGIC 38 (2011). <http://www.dougwalton.ca/papers%20in%20pdf/11ArgMining.pdf> (6-20-2011) ["Walton, *Argument Mining*"].

198. Godden, p. 270.

199. *Id.* p. 4.

200. Walton, FUNDAMENTALS p. 84.

201. Walton, FUNDAMENTALS p. at 84.

202. Wassila Ouerdane, Nicolas Maudet & Alexis Tsoukias, *Argument Schemes and Critical Questions for Decision Aiding Process* p. 4 <http://www.lamsade.dauphine.fr/~tsoukias/papers/comma08-crc.pdf> (6-9-2011), quoting D.N. Walton & C.A. Reed, *Argumentation schemes and defeasible inferences*, in Giuseppe Carenini, Florina Grasso, and Chris Reed, editors, Workshop on Computational Models of Natural Argument, 2002.

203. Godden, p. 14.

204. Walton, *Argument Mining*, pp. 15-17.

205. Walton, FUNDAMENTALS, pp. 307-09. Walton's formulation has been altered somewhat.

206. Walton, FUNDAMENTALS, pp. 307-09. Walton's formulation has been altered to include the Critical Question on whether the categories are mutually exclusive.

207. Walton, FUNDAMENTALS, pp. 62-63.

208. Walton, FUNDAMENTALS, pp. 63-64. Walton's formulation has been altered somewhat.

209. Walton, FUNDAMENTALS, p. 62.

210. Walton, FUNDAMENTALS, pp. 63-64. Walton's formulation has been altered somewhat.

211. Walton, FUNDAMENTALS, pp. 62-63. Walton's formulation has been altered somewhat.

212. Walton, FUNDAMENTALS, pp. 63-64. Walton's formulation has been altered somewhat.

213. Henrike Jansen, *Refuting a Standpoint by Appealing to Its Outcomes: Reduction ad Absurdum vs. Argument from Consequences*, 27 INFORMAL LOGIC 249, 250 (2007) <http://www.phaenex.uwindsor.ca/ojs/leddy/index.php/informal_logic/article/view/484/452> (6-20-2011) ["Jansen"].

214. William Trufant Foster, ARGUMENTATION AND DEBATING, pp. 177 (Houghton Mifflin Co. 1908) ["Foster"]..

215. Walton, FUNDAMENTALS, p. 133.

216. Douglas Walton, *Similarity, Precedent and Argument from Analogy* p. 4. <http://www.dougwalton.ca/papers%20in%20pdf/10SIMILAR.pdf> (6-20-2011).

217. Douglas Walton, *Similarity, Precedent and Argument from Analogy* p. 64. <http://www.dougwalton.ca/papers%20in%20pdf/10SIMILAR.pdf> (6-20-2011).

218. Doouglas Walton, *Similarity, Precedent and Argument from Analogy* p. 5 <http://www.dougwalton.ca/papers%20in%20pdf/10SIMILAR.pdf> (6-20-2011).

219. Doouglas Walton, *Similarity, Precedent and Argument from Analogy* p. 8 <http://www.dougwalton.ca/papers%20in%20pdf/10SIMILAR.pdf> (6-20-2011).

220. Doouglas Walton, *Similarity, Precedent and Argument from Analogy* p. 7 <http://www.dougwalton.ca/papers%20in%20pdf/10SIMILAR.pdf> (6-20-2011).

221. Walton, FUNDAMENTALS, p. 71.

222. Walton, FUNDAMENTALS, p. 72.

223. Walton, FUNDAMENTALS, p. 72.

224. Walton, FUNDAMENTALS ,p. 74.

225. Walton, FUNDAMENTALS, p. 74.

226. Walton, FUNDAMENTALS, pp. 104 - 112; Walton, *Argument Mining,* p. 9.

227. Douglas Walton, *The Sunk Costs Fallacy or Argument from Waste,* p. 488. <http://www.dougwalton.ca/papers%20in%20pdf/02sunkcosts.pdf> (6-20-2011).

228. Walton, FUNDAMENTALS, pp. 112-116.

229. Foster, pp. 131-34.

230. Walton, FUNDAMENTALS, p. 114 n.15.

231. Anthony Weston, A RULEBOOK FOR ARGUMENTS pp. 33-39 (3d ed. 2000).

232. Foster, p. 137.

233. Walton, FUNDAMENTALS, pp. 101 -102.

234. Walton, FUNDAMENTALS, pp. 100 - 104.

235. This Premise is not stated by Walton.

236. Walton, FUNDAMENTALS, p. 103.

237. Walton does not list Argument from Authority under source-based arguments in Walton, *Argument Mining*. However, it logically fits under this category so it is included here.

238. David Hitchcock, *Good Reasoning on the Toulmin Model*, p. 5 <http://www.humanities.mcmaster.ca/~hitchckd/good.pdf> (6-20-2011).

239. Walton, FUNDAMENTALS, pp. 85-86; Godden p. 268. <http://www.phaenex.uwindsor.ca/ojs/leddy/index.php/informal_logic/article/view/485/453> (6-20-2011).

240. Walton, *Argument Mining,* p. 4.

241. David Hitchcock, *Good Reasoning on the Toulmin Model*, p. 4 <http://www.humanities.mcmaster.ca/~hitchckd/good.pdf> (6-20-2011).

242. Walton, FUNDAMENTALS, pp. 87-91.

243. Walton, *Argument Mining,* p. 4.

244. David Hitchcock, *Good Reasoning on the Toulmin Model*, p. 5 <http://www.humanities.mcmaster.ca/~hitchckd/good.pdf> (6-20-2011).

245. Douglas Walton, *Visualization tools, argumentation schemes and expert opinion evidence in law*, p. 122 <http://www.dougwalton.ca/papers%20in%20pdf/07ProbRiskpdf.pdf> (6-20-2011).

246. Douglas Walton, *Visualization Tools, Argumentation Schemes and Expert Opinion Evidence in Law*, pp. 20-21 <http://tillers.net/walton.pdf> (6-20-2011).

247. Douglas Walton, *Visualization Tools, Argumentation Schemes and Expert Opinion Evidence in Law*, pp. 18-19 <http://tillers.net/walton.pdf> (6-20-2011).

248. *Birchfield v. Texarkana Memorial Hospital*, 747 S.W.2d 361 (Tex. 1987).

249. Walton, *Argument Mining,* pp. 7-8.

250. Walton, *Argument Mining,* p. 8.

251. Walton, *Argument Mining,* p. 8. Critical Question 2 was changed from Walton's asking whether the data support the Major Premise to asking whether the data support the Minor Premise. Support for the Validity of the Major Premise must come from prior cases, not the current case. Support for the Minor Premise must come from the current case, not prior cases.

252. Walton, FUNDAMENTALS, p. 116 - 122.

253. Walton does not suggest this Critical Question; instead he asks whether there is room for questioning whether this case may be an exception to the rule that a person committed to proposition *A* is also committed to proposition *B*. Walton, FUNDAMEN-TALS, p. 118.

254. Walton, FUNDAMENTALS, pp. 119 - 121, 124 - 127.

255. Walton omits this Premise. Walton, FUNDAMENTALS, p. 123.

256. Walton phrased it differently: "Other evidence in this particular case shows that *a* is not really committed to A." Walton, FUNDAMENTALS, p. 120.

257. Walton proposed the Conclusion is that person *a* is inconsistent. Walton, FUNDAMENTALS, p. 120. This is really the next-to-last step. The ultimate Conclusion is to reject proposition *A* because the proponent is not sincere in his support for proposition *A*.

258. Walton's third question is: how does the evidence from Questions 1 & 2 prove that there is a conflict of commitments. Walton, FUNDAMENTALS, p. 121. Walton does not reach the ultimate point of the refutation, which is whether the proponent's inconsistency discredits the proposition he now espouses.

259. Walton omits this Premise. Walton, FUNDAMENTALS, p. 123.

260. Walton concludes only that person *a*'s argument should not be accepted. Walton, FUNDAMENTALS, p. 123.

261. Douglas N. Walton, *Formalization of the Ad Hominem Argumentation Scheme*, 8 JOURNAL OF APPLIED LOGIC 1, 6 (2008) <http://www.dougwalton.ca/papers%20in%20pdf/formAH06v5.pdf> (6-20-2011)

262. *Id.*

263. *Id.* p. 7.

264. Walton, FUNDAMENTALS, pp. 91-96.

265. Walton, FUNDAMENTALS, p. 92.

266. Walton, FUNDAMENTALS, pp. 93-94.

267. Walton, ARGUMENT SCHEMES FOR PRESUMPTIVE REASONING, p. 50 (1996)

268. Walton, ARGUMENT SCHEMES FOR PRESUMPTIVE REASONING, p. 51 (1996).

269. *Id.* at p. 50.

270. Walton, ARGUMENT SCHEMES FOR PRESUMPTIVE REASONING, p. 50 (1996).

271. Walton, FUNDAMENTALS, pp. 96-100.

272. Douglas Walton, *Similarity, Precedent and Argument from Analogy*, 18 ARTIFICAL INTELLIGENCE AND LAW 217 (2010), <http://www.dougwalton.ca/papers%20in%20pdf/10SIMILAR.pdf> (6-20-2011) p. 4.

273. Walton, FUNDAMENTALS, p. 97.

274. Walton, FUNDAMENTALS, p. 99.

275. Douglas Walton, *Similarity, Precedent and Argument from Analogy*, 18 ARTIFICAL INTELLIGENCE AND LAW 217 (2010), <http://www.dougwalton.ca/papers%20in%20pdf/10SIMILAR.pdf> (6-20-2011) p. 5.

276. *Id.* at p. 19.

277. Walton, FUNDAMENTALS, pp. 128 - 132.

278. Douglas Walton, *Similarity, Precedent and Argument from Analogy* p. 10. <http://www.dougwalton.ca/papers%20in%20pdf/10SIMILAR.pdf> (6-20-2011).

279. *Id*.

280. Wibren Van der Burg, *SLIPPERY SLOPE ARGUMENT by Doug Walton*, XV INFORMAL LOGIC 222, 223 (1993) <http://www.phaenex.uwindsor.ca/ojs/leddy/index.php/informal_logic/article/view/2489/1931> (6-20-2011). ["van der Burg"].

281. *Id*..

282. *Id*. at p. 223.

283. *Id*. at p. 223.

284. *Id*. at p. 223.

285. Walton, FUNDAMENTALS, pp. 107 - 112.

286. Walton, FUNDAMENTALS, pp. 110 - 111.

287. Walton, FUNDAMENTALS, p. 111.

288. van der Burg, p. 223.

289. *Id*. at p. 226.

290. A special instance of prima facie is discussed in *Baker v. Goldsmith*, 582 S.W.2d 404, 408-09 (Tex. 1979), regarding the preliminary showing needed to permit a bill of review to proceed to the trial stage, where the Court said: "a prima facie meritorious defense is made out when it is determined that the complainant's defense is not barred as a matter of law and that he will be entitled to judgment on retrial if no evidence to the contrary is offered. This is a question of law for the court. . . . Prima facie proof may be comprised of documents, answers to interrogatories, admissions, and affidavits on file along with such other evidence that the trial court may receive in its discretion. The bill of review defendant may respond with like proof showing that the defense is barred as a matter of law, but factual questions arising out of factual disputes are resolved in favor of the complainant for the purposes of this pretrial, legal determination. If the court determines that a prima facie meritorious defense has not been made out, the proceeding terminates and the trial court shall dismiss the case."

291. http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=evid&codebody=&hits=20

292. *Presumptions: Rule 301 Definitions,* <http://www.capitol.hawaii.gov/hrscurrent/Vol13_Ch0601-0676/HRS0626/HRS_0626-0001-0301.htm>; *Rule 302 Presumptions in civil proceedings*, http://www.capitol.hawaii.gov/hrscurrent/Vol13_Ch0601-0676/HRS0626/HRS_0626-0001-0302.htm; *Rule 303 Presumptions imposing burden of producing evidence*, http://www.capitol.hawaii.gov/hrscurrent/Vol13_Ch0601-0676/HRS0626/HRS_0626-0001-0303.htm; *Rule 304 Presumptions imposing burden of proof*, http://www.capitol.hawaii.gov/hrscurrent/Vol13_Ch0601-0676/HRS0626/HRS_0626-0001-0304.htm; *Rule 305 Prima facie evidence* http://www.capitol.hawaii.gov/hrscurrent/Vol13_Ch0601-0676/HRS0626/HRS_0626-0001-0305.htm