

WITNESS TESTIMONY EVIDENCE

ARGUMENTATION,
ARTIFICIAL INTELLIGENCE,
AND LAW



DOUGLAS WALTON

CAMBRIDGE

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Witness Testimony Evidence

Recent work in artificial intelligence has increasingly turned to argumentation as a rich interdisciplinary area of research that can provide new methods related to evidence and reasoning in the area of law. In this book, Douglas Walton provides an introduction to basic concepts, tools, and methods in argumentation theory and artificial intelligence as applied to the analysis and evaluation of witness testimony. He shows how witness testimony is by its nature inherently fallible and sometimes subject to disastrous failures. At the same time, if used properly, such testimony can provide evidence that it is not only necessary but inherently reasonable for logically guided legal experts to accept or reject a claim. Walton shows how to overcome the traditional disdain for witness testimony as a type of evidence shown by logical positivists and the views of trial skeptics who doubt that trial rules deal with witness testimony in a way that yields a rational decision-making process. This book will be of interest to those who work in the areas of analytical philosophy, informal logic, artificial intelligence, and law.

Douglas Walton is professor of philosophy at the University of Winnipeg. An internationally recognized scholar of argumentation theory and logic, he is the author of many books, most recently *Argumentation Methods for Artificial Intelligence in Law* and *Fundamentals of Critical Argumentation*. Dr. Walton's research has been supported by the Social Sciences and Humanities Research Council of Canada and the Isaak Walton Killam Memorial Foundation.

Witness Testimony Evidence

Argumentation, Artificial Intelligence, and Law

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For Karen, with love.

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Introduction

In this book, tools and techniques developed in argumentation theory and artificial intelligence are applied to problems of analyzing and evaluating argumentation used in law. Argumentation is a set of context-sensitive practical methods used to help a user identify, analyze, and evaluate arguments, especially common ones of the kind often found in everyday discourse. In the past it was the prevalent assumption that the deductive model of valid inference was the cornerstone of rational thinking. There has now been a paradigm shift to highly knowledge-dependent models of reasoning under conditions of uncertainty where a conclusion is drawn on a basis of tentative acceptance on a balance of considerations. Argumentation based on this new notion of argument, also called informal logic, is now being widely used as a new model of practical reasoning in computing, especially in agent communication in multiagent systems. Recent work in artificial intelligence and law has recently turned more and more to argumentation as a rich, interdisciplinary area of research that can furnish methods, especially in those areas of law related to evidence and reasoning (Bench-Capon, 1995; Gordon, 1995; Prakken, 2001a; Verheij, 2005; Walton, 2005). Generally, techniques and results of argumentation “have found a wide range of applications in both theoretical and practical branches of artificial intelligence and computer science” (Rahwan, Moraitis, and Reed, 2005, p. I). At the same time, artificial intelligence in law has coincided with the new evidence scholarship in law (Tillers, 2002). The general purpose of this book is to join together these techniques and results and to extend them to the problem of understanding the structure of witness testimony as a form of evidence in law. The aim is to enable a user to identify, analyze, and evaluate claims made on the basis of appeals to witness testimony used as legal evidence. It is shown that the identification and analysis problems can be solved, but that the evaluation problem is much harder.

1. Purpose of the Book

Much of the current research in artificial intelligence that develops new tools for the analysis of reasoning is not widely known to lawyers and judges, or to others, like forensic scientists, interested in reasoning about evidence. The development of this new argumentation technology in computing throws quite a different light on how to approach legal evidence, and for that matter on how evidence is treated in other fields depending on witness testimony as evidence, such as history. An important purpose of this book is to make the benefits of this specialized research initiative more widely available to those who would be likely to use it.

This is an interdisciplinary book. The author's expertise is in the field of argumentation, but the subject matter of the book is a main topic in law, specifically, in those parts of law concerned with evidence. Much of the book is concerned with recent developments in artificial intelligence, a field of computing. Because it spans all three fields, there is a question of which audience precisely the book has in mind. The author's work is known to the artificial intelligence and law community. This community is already aware of the author's articles, and for the more technical aspects of this work, also of his recent monograph *Argumentation Methods for Artificial Intelligence in Law*. The book is set out to target the audience of evidence scholars, trial lawyers, and the people who teach them. But it is not meant to use argumentation theory to explain to lawyers how to use witness testimony safely. There is already a wealth of studies on the "science of witnessing", including empirical studies on the reliability of children as witnesses, on memory, on false memory syndrome, on admissible ways to help memory along, studies into the impact of light on facial identification, and so forth. Law is already aware of these issues of witness reliability and has tools at its disposal to help the lawyer evaluating witness testimony. What is the purpose of this book, then, given its interdisciplinary approach, and which audience precisely is the book directed to?

The book uses recent developments in argumentation theory and artificial intelligence to vindicate Wigmore's thesis that there is a science of logic, a structure of reasoning representing rational argumentation underlying the rules of evidence used in law. But almost all the evidence scholars since the seventeenth century have worked in a normative framework built upon some shared assumptions underlying a rationalist approach to evidence presupposing a shared model of the normative goals of education (Twining, 2006). In Wigmore's time, however, there was only deductive logic, along with inductive rules for evaluating reasoning, available to be used to model reasoning in this structure. Recent advances in argumentation theory, moving forward using artificial intelligence tools and methods, have made possible a third alternative. It is based on defeasible reasoning models that are neither deductive nor inductive in nature. The growing acceptance of this

third approach to modeling reasoning is a paradigm shift. It has led to new standards and methods for identifying, analyzing, and evaluating reasoning, especially ones very well suitable for applicability to legal argumentation and evidence. The purpose of the book is to show how this paradigm shift applies to rethinking the modeling of rational thinking about witness testimony as a kind of evidence. It builds on the normative framework already present in shared assumptions underlying rationalist theories of evidence and law by providing new resources from argumentation theory and artificial intelligence.

The book provides an introduction to concepts, tools, and methods in argumentation theory and artificial intelligence, especially as applied to the analysis and evaluation of evidence of the kind used in law. However, it is not meant just to promote computer systems as tools to teach argumentation to young law students, although it may incidentally have this effect, one which could be quite useful. The purpose is to build a normative theory of how witness testimony is based on a kind of defeasible reasoning used as evidence in a trial. It shows how this kind of reasoning is by its nature inherently fallible, and sometimes subject to disastrous failures, but at the same time, if used properly, can be a kind of evidence that is not only necessary but inherently reasonable for guiding us logically to accept or reject a claim. By doing this it shows how the traditional disdain for witness testimony as a kind of evidence shown by logical positivists, and the views of trial skeptics who doubt that legal rules deal with witness testimony in a way that ensures a rational decision-making process, can be overcome.

Our functioning in everyday life depends crucially on rational reliance on witness testimony. Many academic disciplines other than the study of law, such as history, also rely on it. If I ask another person on the street for directions, it is rational to follow what he or she says unless I find new information indicating that it appears to be erroneous. The purpose of the book is to treat law, and the inherent rationality of legal procedure, as a benchmark to explain why such argumentation in everyday life and in these disciplines can make rational claims as to which statements to accept or reject as supported by evidence. The use of cases of legal reasoning in the book is not restricted to specific jurisdictions, but is supposed to illustrate how varied kinds of uses of witness testimony in different circumstances and jurisdictions bring out the underlying patterns of reasoning this kind of evidence is based on.

A current problem with legal argumentation is that so much of how the evidence is presented and evaluated in a trial depends on the rhetorical skills of the lawyer and the capabilities of the jury to have the critical thinking skills to match them. Although our system is an adversarial one, and persuasive rhetoric has a proper and important place it, the problem is that juries, as lawyers well know, are highly susceptible to clever rhetorical strategies that can be used to win them over. We are all familiar with a fellow

student from high school or university who was a persuasive opinion leader, often outspoken in giving speeches and taking up causes. We easily identify such young persons as destined for political careers. The problem with legal argumentation is that the skillful lawyer who has practiced techniques of powerful speaking can exert an influence beyond the merits of the evidence in the case. Rhetorical skills are useful and necessary, but in a fair trial, participants need to be capable enough in argumentation skills to weigh evidence on both sides of a disputed case so that their individual rational decision-making capabilities are not overwhelmed by an impressive speaker. The same problem is typical in jury deliberations, where one powerful speaker often dominates the discussions and carries the others along to a conclusion that is not commensurate with the way the evidence should really balance out and determine the outcome of the case.

How can this natural, but often troublesome influence be counteracted? The only way that is going to be ultimately successful is by moderating this rhetorical factor with a counterbalance of a better appreciation of rational argumentation. All of us who are participants in the legal system need to become better at analyzing and evaluating evidence by becoming aware of the common weak spots in argumentation and by having some idea of what the requirements are for an argument that should be rationally persuasive and not just rhetorically powerful. That is the purpose of this book.

Witness testimony is a common and important form of evidence in law, and in many cases it is the main evidence on which a conviction or decision is arrived at in a trial. But many recent cases of wrongful conviction demonstrated by DNA evidence, along with social science research on memory and witness testimony (Loftus, 1979), have shown how fallible and prone to error this kind of evidence is. To follow up on what has been learned from these findings, what is needed is a better structural model of how conclusions drawn from witness testimony can be represented as a special form of evidence. Evidence, in such cases, is a matter of drawing conclusions from premises. The premises depend on trust that the witness is reporting some real events truthfully and accurately, and thus the conclusion drawn from them should be by an inference that is guarded and provisional. Still, in law, if the premises of such an argument are accepted as factual, the inferential link between the premises and conclusion can be strong enough to support drawing the conclusion, and the argument can be accepted as evidence that the conclusion is true. But should such fallible evidence be enough to secure a conviction? And how should it be evaluated as strong or weak? How can we model the structure of appeal to witness testimony as a form of argument, specify what its premises and conclusions are, identify its requirements as evidence, and pinpoint where critical questions should be raised about it? The problem is as much one of knowing how to question and criticize such arguments as it is one of knowing how they provide support for a claim.

2. Outline of the Book

In Chapter 1 it is shown how witness testimony is a kind of evidence that can be structured in the form of what is called an argumentation scheme. An argumentation scheme is a stereotypical pattern representing a form of inference in which a conclusion is derived rationally from a set of premises that are assumed to be true. An argumentation scheme is a schematic form of reasoning that displays a type of argument by identifying its premises, its conclusion, and the nature of the inferential link joining the two (Verheij, 2003). Argumentation schemes have proved to be an important new tool for representing legal reasoning in artificial intelligence (Prakken, Reed, and Walton, 2003). Many of the most common argumentation schemes represent inferences that are defeasible, meaning that they only hold tentatively and are subject to defeat in the future as new evidence comes in. The standard example of a defeasible argument is the Tweety case:

Birds fly.

Tweety is a bird.

Therefore Tweety flies.

If the premises are true, it is plausible to accept that the conclusion holds, but the conclusion may fail to hold if new evidence comes in. For example suppose Tweety is a penguin. Or suppose we find out that Tweety has an injured wing. In such cases, the argument defaults. It is defeated by the new evidence that has come in.

Suppose a witness testifies that she saw something, and then independently a second witness testifies to the same fact. The one piece of evidence is said to corroborate the other. But suppose the testimony of the second witness contradicts that of the first. This finding raises questions about one testimony or the other as evidence. Chapter 1 introduces the reader to the notion of evidence corroboration and to some tools from argumentation theory and artificial intelligence for critically questioning arguments. The method of evaluation applied to such arguments is to use a set of critical questions that match each scheme. The critical questions represent standard ways that doubts can be raised about whether the argument fitting the scheme holds or not.

From this beginning point, the book goes on to study the problem of how an appeal to witness testimony should be evaluated as a kind of argumentation that is weak in some respects and strong in others. The basic problem is that defeasible arguments of the kind fitting these argumentation schemes do not have a structure that matches that of deductive or inductive reasoning, the forms of reasoning that have been most carefully studied in the past. It is argued that neither deductive logic nor inductive reasoning of the Bayesian kind is sufficient for this task. In Chapter 2 a third form of reasoning

called plausible reasoning is introduced, and it is shown how evidence based on witness testimony is best evaluated as a form of plausible reasoning. Plausible reasoning is like deductive and inductive reasoning in that it can be studied as a kind of inference from a set of premises to a conclusion. In this framework, someone who wants to evaluate the argument can then examine the link between the premises and the conclusion by applying an argumentation scheme to it. It is argued that the tool of choice is the argument diagram, a method that displays a chain of reasoning in a given case as a sequence of connected premises and conclusions (Wigmore, 1931; Anderson and Twining, 1991; Reed and Rowe, 2002). It is shown how an argument based on witness testimony can be evaluated, using such a diagram, by attaching plausibility values to the premises, the conclusions, and the inferential links that join them together into a chain of reasoning.

The model presented in Chapters 1 and 2 represents one fairly standard way of analyzing and evaluating arguments in traditional logic. However, if we look at legal argumentation of the kind commonly found in a trial, we find that although it does fit this model up to a point, to make further progress we have to move on to a different, more complex model. This model is presented in Chapter 3 by applying theory of scripts and stories (Wagenaar, van Koppen, and Crombag, 1993) to cases in which different stories presented in witness testimony need to be evaluated by comparing them. This model is based on the idea that in a trial, for example, typically two stories are presented and one competes with the other as an account of the truth of the matter being disputed. For example, suppose a knife used to commit a crime is found at the home of the defendant. Two competing stories will typically be offered on how the knife got there. The prosecution may present an elaborate story, based on forensic evidence, showing that the knife used to commit the crime has identifiable characteristics that match it with a knife found at the defendant's home. The defendant may argue that he found the knife on the street while he happened to be walking past the area of the crime scene, and took it home. On this model of the argumentation in the case, we have two different accounts that conflict with each other, where each account presents a so-called story, a hypothetical series of alleged events that supposedly can be used to explain the facts in the case. The problem of resolving the conflict of opinions in this kind of case is based on a model different from the traditional logical one described in the previous paragraph. In this new model, each story hangs together, presenting a more or less plausible account of what really happened. One contradicts the other, meaning both cannot be true. The problem is to find some method of objectively determining which story of the two is the more plausible.

In Chapter 4 it is argued that the best tool for evaluating plausible reasoning is that of the formal dialogue system. In this model, argumentation is seen as taking place within a context of dialogue in which there are two parties, called the proponent and the respondent. Each side puts forward

argumentation of the kind that in a legal trial would be formed into a mass of evidence representing the story or account advocated by each side. The model is based on dialogue systems of a kind recently applied in artificial intelligence as the basis for interaction between autonomous agents in multi-agent systems (McBurney and Parsons, 2002, p. 257). The central thrust of the research initiative is based on the hypothesis that significant aspects of legal argumentation can be analyzed and evaluated using a dialogue model originally developed in logic to study fallacies (Hamblin, 1970) and other problematic aspects of argumentation (Hamblin, 1971; Walton and Krabbe, 1995; Walton, 1998; Krabbe, 1999). A fresh new approach called computational dialectics that is gaining momentum in artificial intelligence (AI) and legal theory views legal argumentation as a dialogue process in which there are two sides (Gordon, 1996). This dialectical (from the Greek word for conversation or dialogue) approach is different from the more widely accepted approach current in logic and cognitive science. In the latter approach, which could be called *monolectical*, rationality is represented by the reasoning of a single agent, or even by a set of premises and conclusions abstracted from any agent. In the dialectical model, a legal argument, one put forward as evidence in a trial, for example, can be modeled as a dialogue tableau with two columns.¹ Each column represents moves by one side, such as the asking of questions or the putting forward of arguments. Each move of one side is paired with a move of the other side. For example, a question put by one side is matched with the answer given by the other side. In a case of witness testimony in a trial, the column on the left represents the moves of the questioner who, in examination dialogue, is critically probing into the previously given account or ‘story’ of the other side. The column on the right represents the testimony of the respondent, who is presumably trying to maintain consistency and plausibility, even in response to cross-examination posing criticisms and rebuttals. On the dialectical model, legal argumentation is tested as evidence that holds up or not through the critical scrutiny of both sides in an examination dialogue.

A problem with evidence based on witness testimony is that such arguments can be accepted temporarily as a reasonable way of moving forward in an investigation, as long as they are regarded as subject to later correction when new evidence comes into the case. As noted above, witness testimony is fallible. Witnesses can and do lie, and recent cases of wrongful conviction have shown how prone to error this form of evidence can be. The new dialectical model portrays witness testimony as a defeasible form of argument and specifies the appropriate critical questions that need to be asked in order to cast doubt on this form of evidence. It shows not only how to identify appeal to witness testimony as a specific form of legal argument, but also how to analyze and evaluate examples of it by pinpointing the weaknesses

¹ Dialectical arguments are defined by Verheij (2001, p. 4) as arguments that contain not only supporting reasons, but also attacking reasons.

in them. In the new model, argument from witness testimony is analyzed as a distinct form of evidence that needs to be evaluated in a dialogue format of examination. The usual method of evaluating defeasible arguments in an investigation is by using a set of critical questions that match the specific argumentation scheme (Prakken, 2001b). The problem is that the deployment of critical questions cannot always be adequately modeled using only the argument diagramming technique. They introduce a notion of dialogue that is contextual and is difficult to model using only affirmative propositions of the kind characteristic of the representation of an argument in an argument diagram (Lodder, 1999). Appeals to witness testimony are fallible arguments that fail in some cases, and only form part of a mass of evidence. They need to be evaluated as part of a larger body of evidence in a case. Such arguments can only be evaluated by taking into account other factors. These factors include (1) burden of proof, (2) legal standards defining how strong an argument has to be in order to be successful in a given case, and (3) how well testimony that has been offered in a case hangs together as part of a plausible story, or account of what supposedly happened. As Bench-Capon and Prakken (2005) noted, a case presented to a lawyer initially takes the form of a story told by a client. Because several interpretations of such a story tend to be possible, the lawyer's job is to identify the pros and cons of these interpretations. The same kind of job of examining the pros and cons of competing stories confronts the judge or jury, who must decide how to evaluate witness testimony as evidence in a trial. But how should the trier do that? The answer given in Chapter 5 is – by weighing up the evidence on both sides in a process of evidence evaluation that takes the form of a dialogue.

Chapter 5 puts forward an innovative analysis of a special model of dialogue called examination dialogue. Examination, for example, cross-examination of a witness in a trial, is a highly visible phenomenon in legal argumentation and has been studied in trial manuals by jurists. But for the precise requirements of computational dialectics, how can examination dialogue be defined? Although it was known to the ancient Greek philosophers, to Aristotle in particular, as representing a distinctive type of reasoning called 'peirastic', few in modern philosophy or argumentation theory have previously paid much serious attention to it. An example cited by the ancients would be a case of pedagogical examination. A teacher asks a student a question to see if the student knows the answer and can present the requested information. We still use the term 'examination' for this type of dialogue. This language offers a clue to understanding the kind of examination that takes place in court. A witness presents testimony, for example, and the lawyers on both sides then take turns examining the witness. What typically happens is that the witness presents what was called a 'story' above – a connected account of some event that allegedly took place and is described by the witness. Other witness testimony or circumstantial evidence may then corroborate the testimony, or may go against it, making the original story

seem questionable. What also often happens is that a different witness may tell a different story. In fact, the story of one may be incompatible with the story of the other. How does the court attempt to judge which story is the one that should be believed? In cross-examination (Park, 2003), contradictions, weak points, or implausible parts of a story are questioned and critically probed.

Chapter 5 breaks new ground by defining the characteristics of examination dialogue as a specific type of information-seeking dialogue. The ultimate thesis of the book is that witness testimony as evidence needs to be evaluated in a given case by using two tools. One of these, as indicated above, is the argumentation scheme for argument from witness testimony. The other is the examination dialogue as the formal framework in which the argumentation is used, and needs to be evaluated by comparing and contrasting the accounts presented by both sides in the dialogue and judging which is the more plausible. Thus plausibility of argumentation is seen as a comparative matter that needs to be judged by how well each side has performed in a dialogue. Chapter 5 shows how the processes of corroborating testimony and critically probing into a story to find the weak points in it need to be seen as parts of the structure of examination as a type of dialogue, and that this structure is the key to evaluating witness testimony.

It is the argument of Chapter 5 that the structure of an examination dialogue is that of a subspecies of what is called an information-seeking type of dialogue, in which the purpose is not only to collect information but also to judge whether it is reliable or not.

As one outcome of the book, a new perspective on the concept of information is developed. In Chapter 3, the mathematical definition of information (Shannon and Weaver, 1972) is discussed, and it is shown how this positivistic view of information needs to be rethought and restructured.² To replace this positivistic view, which sees information only as the factual content of a true statement, the new theory takes a more realistic view of what is accepted as factual information under the conditions of uncertainty and lack of knowledge characteristic of evidence evaluated in a trial. The new view portrays information as something that is provisionally accepted in a dialogue even though it may later be rejected when tested during the process of examination as an investigation or trial continues.

In Chapter 5, information-seeking dialogue is further clarified by contrasting it with a type of dialogue we are all familiar with, called interrogation. Interrogation is an aggressive type of dialogue in which the proponent uses tricky tactics, even threats and force, to try to get the respondent to admit something that might be used in evidence against him.

² Although it was long dominant in both science and philosophy, this view of information has not generally been accepted in legal evidence scholarship. Legal theory never took a positivistic view with respect to reasoning about disputed facts and has long recognized that testimonial assertions can only be accepted provisionally.

Interrogation has been very little studied in the literature on argumentation, but as a type of dialogue it is closely related to information-seeking dialogue. This analysis of interrogation provides a contrast to the analysis of witness examination in the adversarial trial system, throwing much light on how evidence from witness testimony is based on different kinds of information-seeking dialogue in the two systems. From the point of view of rational argumentation, interrogation is very much a negative type of dialogue, associated more with deception, coercion, and fallacies than with logical reasoning used to move toward the truth of the matter being discussed. It is shown that in studying information-seeking dialogue, we always need to keep in mind the contrast between it and its negative counterpart, interrogation.

Examination is put forward as a complex form of dialogue that is goal-directed and has a definite structure, analyzed as a subspecies of information-seeking dialogue. It is argued that only when we understand the formal characteristics of this type of dialogue will we be able to fully understand how to properly evaluate witness testimony as a kind of evidence. Examination dialogue in law, it is argued, can be analyzed as a species of information-seeking dialogue embedded within a critical discussion type of dialogue that is central to a trial. Both types of dialogue have been analyzed in previous work in argumentation theory, the critical discussion type of dialogue much more thoroughly than the information-seeking type. Much of the book is dedicated to the advancement of our understanding of the information-seeking type of dialogue. Understanding this contextual embedding, it is argued in the book, is essential to understanding how appeal to witness testimony works as a form of argumentation that can be methodically evaluated as strong or weak. The analyses of many examples of legal argumentation presented in the book show convincingly that this new direction is a path that will need to be followed by others.

The problem posed for Chapter 6 is to see what form these types of dialogue take in a typical trial in which witness testimony is used by both sides as a form of evidence that, with other evidence, makes up the factual elements of a case. Because legal argumentation is procedurally structured in a way that is interesting from the viewpoint of dialogue theory, the study of information-seeking dialogue in law is particularly revealing. Through the study of legal argumentation, it is shown how information-seeking dialogue can elicit premises necessary as the basis for rational arguments in intelligent deliberation, informed critical discussion, and other types of dialogue that contain reasons to support or rebut a claim. Chapter 6 shows how the new theory of witness testimony should be defined and evaluated as evidence in the adversarial system of Anglo-American common law. Anglo-American law is based on an adversarial approach (van Koppen and Penrod, 2003a) in which the advocates on each side in a trial collect the information and present it to the judge or jury. The peirastic theory of examination is highly

suites to modeling how evidence is collected, presented, and evaluated in the adversarial trial. A chain of plausible reasoning in evidence put forward in a trial fits into a body of evidence supporting an ultimate conclusion to be proved or doubted. According to the peirastic theory, such a conclusion is typically drawn by a chain of plausible inferences from premises that seem to be true, based on the account or story offered by the witness, but subject to examination. We judge that one story is more plausible or less plausible than another by testing it against other evidence, and especially by cross-examination. In an adversarial system, cross-examination is carried out by the critical probing and attempted rebuttals of a story by the opposed side. In Chapter 6 it is shown that the adversarial trial is a method of resolving a conflict of opinions by rational argumentation based on evidence. It is shown how factual evidence is collected in an information-seeking dialogue that is embedded in a critical discussion. It is shown how the trial framework meets the requirements for rational argumentation in a critical discussion.

Chapter 7 shows how witness testimony evidence should be evaluated using the peirastic model of examination dialogue and the other tools developed in the previous chapters. This chapter begins on a positive note, by first studying how witness testimony can be supported by evidence, and in particular the kind of corroborative evidence posed as a problem for study in Chapter 1. Chapter 7 continues on a negative note by analyzing how argumentation that questions, attacks, or defeats arguments from witness testimony can be modeled as evidence. Chapter 7 introduces two systems designed to model legal argumentation, called DefLog and Carneades, and methods of analyzing, visualizing, and evaluating both corroborative and attacking witness testimony are developed, based on tools provided by these two systems. At the end of the chapter, a summary of how the theory in the book brings together a general methodology for the evaluation of witness testimony is presented.

Witness Testimony as Argumentation

There is a long tradition in philosophy, going back to Plato, of contempt for arguments based on witness testimony as being unreliable, subjective, misleading, and impossible to evaluate as evidence by objective standards. Any argument as fallible as one based on witness testimony is easily seen as subjective in nature, and simply beyond the range of any exact, objective treatment. Certainly the recent findings of social scientists (Loftus, 1979) have given us plenty of grounds for distrust of this fallible form of evidence. In this chapter, some notorious cases of lying witnesses and wrongful convictions based on false or inaccurate witness testimony dramatically illustrate the point. On the other hand, even in an age where video evidence seems to be usurping the place of eyewitness testimony, we could scarcely do without witness testimony as an important kind of evidence in trials and investigations. Thus it is a kind of evidence that is on a razor's edge. We need it, but it can go badly wrong. Thus it is important to study how it should be evaluated as a kind of evidence that can be strong in some cases and weak, or even erroneous and misleading, in others. Chapter 1 begins this process by stating and identifying the premises that witness testimony is based on as a type of argumentation, the conclusions that it leads to, the nature of the inferential link that joins them, and how it can be supported or rebutted.

The analysis presented in Chapter 1 portrays appeal to witness testimony¹ as a form of argument that is defeasible, but that can be structurally correct and provide evidence of a certain sort provided certain conditions are met. To say it is defeasible means that it has only a kind of tentative standing as a way of supporting a conclusion, because it is subject to defeat as new evidence is collected during an investigation. There is already quite a literature in artificial intelligence dedicated to the analysis of defeasible reasoning,

¹ The expressions 'appeal to witness testimony' and 'argument from witness testimony' are taken to be equivalent, each representing a specific form of argumentation defined in Chapter 1.

especially as applied to legal argumentation (Verheij, 1996; Prakken, 1997). These findings are applied to appeals to witness testimony. In Chapter 1, appeal to witness testimony is shown to have an argument form, but one that needs to be approached right from the beginning by taking the special characteristics of its form as an argument, and its defeasible nature, into account. A case is made for the claim that when the right conditions are met in a case, appeal to witness testimony can carry probative weight as a tentative argument that can shift a burden of proof to one side or the other in relation to an unsettled issue in that case. How this form of argumentation can properly be evaluated as evidence in legal argumentation is shown in the rest of the book.

1. Witness Testimony in Logic and Philosophy

1.1. *Contemptuous Attitude toward Testimony as Evidence*

In traditional logic there is very little in the way of positive or constructive analysis of the structure of witness testimony as a form of rational argument. Indeed, distrust about the subjective nature of appeal to witness testimony as a form of argument has been the dominant view of it in logic and philosophy. The reason appears to be the longstanding distinction drawn between knowledge and belief in epistemology. This traditional distrust can be expressed in the form of an argument from a premise to a conclusion, as follows. The user of testimony does not have knowledge, or direct knowledge, of the facts alleged by the testifier. Since conclusions drawn from testimony are not knowledge, it follows that they must be merely matters of subjective belief. On this traditional view, then, since testimony is not knowledge, there is no place for it as a form of rational argument within logic. This view was even more sharply formulated in early analytical philosophy in the twentieth century under the influence of the logical positivists, sometime also called logical empiricists. This school of thought held that the only statements that are meaningful are those that either are empirically verifiable or are logically analytic statements.² Conclusions drawn by one person, based on the testimony of another person, do not appear to fit into either category. It follows that such conclusions are not meaningful statements. Since they are unverifiable, they are merely subjective in nature. This negative view of arguments based on testimony has been highly influential in the twentieth century, but its roots go back to ancient philosophy.

In the *Theaetetus* 201a–201d, Socrates cites the case of witness testimony to prove his contention that true belief is not knowledge. To prove his point, he cites the case of a jury being convinced of facts that can only be known by an eyewitness (201c). He asks Theaetetus whether such a jury, judging as they are by hearsay, and accepting true belief, are judging without knowledge.

² The classic formulation of the principle of verifiability can be found in Ayer (1956).

Theaetetus answers affirmatively. Socrates concludes (201c) that knowledge and true belief must be different things. For Plato, only knowledge is important for coming to the truth. Belief is subjective and constantly changing. Thus testimony, since it is based only on belief and not on knowledge, is unreliable and is not to be trusted in arriving at a conclusion. In this particular passage (quoted from *The Collected Dialogues of Plato*, ed. Edith Hamilton and Huntington Cairns, New York, Pantheon Books, 1961), Socrates expresses contempt about arguments based on testimony, and about the lawyers who use it to convince a jury in court.

Socrates: You will find a whole profession to prove that true belief is not knowledge.

Theaetetus: How so? What profession?

Socrates: The profession of these paragons of intellect known as lawyers and orators. There you have men who use their skill to produce conviction, not by instruction, but by making people believe whatever they want them to believe. You can hardly imagine teachers so clever as to be able, in the short time allowed by the clock, to instruct their hearers thoroughly in the true facts of a case of robbery or other violence which those hearers had not witnessed.

In this passage, Plato expressed a contemptuous attitude about using witness testimony as a form of rational argument that gives reasons to accept a claim. A mistrust of this form of argument is clearly conveyed. This negative attitude has continued to be very influential through the history of logic and philosophy.

The generally accepted opinion in modern analytical philosophy, summarized by Faulkner (2002), sees our acceptance of testimony as being based only on credulity rather than on our having reasons to accept it. Faulkner (2002, p. 354) summed up this climate of opinion in a number of commonly accepted beliefs about testimony. One is that we largely lack reasons for accepting testimony. Another is that where we do have reasons, they are usually insufficient to justify our testimonial beliefs. Another is that when such beliefs are justified, it is on a basis of credulity, meaning that we just accept them because we believe them. This climate of opinion in philosophical accounts makes acceptance of a conclusion based on testimony look very shaky, or even irrational. It looks as if either we cannot possess reasons for our acceptance of our testimonial beliefs, or if we can, they are very weak reasons at best, which often turn out not to justify the belief in question. But surely saying that our acceptance of testimony is based on credulity is a position that does not leave much room for seeing appeal to testimony as a rational form of argumentation that can offer a reason to support a claim. If we analyze the evidential basis of arguments from testimony by saying we believe it because we believe it, this does not leave much room for finding some kind of structure of rational justification behind them that can be analyzed and evaluated as based on an underlying process of logical reasoning. Thus seeing testimony as being based on belief or

human credulity leads back to the Platonic view so often found in philosophical writings on the subject, which is highly mistrustful of arguments based on testimony as a form of rational argument giving reasons to support a claim.

1.2. *Seeking a Rational Basis for Testimony*

Despite their tendency to downgrade testimony as a form of evidence, and their tendency to define it exclusively in terms of belief and knowledge, philosophers have, from time to time, attempted to find a rational basis for accepting testimony as evidence. The Scottish philosopher Thomas Reid (1764, p. 197) wrote that human judgment is by nature inclined to accept belief on a balance of considerations.

It is evident that, in the matter of testimony, the balance of human judgement is by nature inclined to the side of belief; and turns to that side of itself, when there is nothing put into the opposite scale. If it was not so, no proposition that is uttered in discourse would be believed, until it was examined and tried by reason; and most men would be unable to find reasons for believing the thousandth part of what is told them.

This way of describing testimonial evidence shows that it has a form of argument called the *argumentum ad ignorantiam*, or argument from lack of evidence. If there is no evidence against a claim, that lack of evidence is a reason for accepting it, at least on a tentative basis, until or unless more evidence comes in. This way of viewing testimony sees it as judged on a balance between two sides. If there is no evidence against some claim based on testimony, then the claim can be provisionally accepted until evidence against it is found. If there is nothing put into the opposite scale, human judgment is inclined toward accepting testimony. This account makes an argument based on testimony seem more rational, because it uses the model of weighing two sides, the reasons for and against a claim, on a scale.

Reid's analysis of testimony departs from the belief model in that it represents a kind of argumentation based on presumption. The underlying presumption is that witnesses generally report an event the way the witness thought it happened. A modern evidence theorist, David Schum (1994, p. 82), put this general presumption of arguments based on testimony in the form of a conditional: "if a person says that an event happened, then it often did happen". These insights point the way to an analysis of the structure of the reasoning behind use of testimony as evidence. It has the following form of inference.

Conditional Premise: If a witness says that an event happened then often it did happen.

Testimony Premise: Witness *W* says that event *E* happened.

Conclusion: *E* happened.

This argument looks to have a form familiar in logic (*modus ponens*), except that the conditional premise contains the weasel word ‘often’, leaving room for its turning out to be false in some cases. The best such an argument offers is a reason for tentative acceptance of the conclusion as a presumption on a balance of considerations. So what kind of argument is this? It is evidently one that can go badly wrong in some cases. Yet it also represents a kind of evidence that can hardly be ignored in many cases, if one wants to arrive at a conclusion on the basis of all the relevant evidence in a case.

It was not until the appearance of a book written by an analytical philosopher (Cody, 1992) that appeal to testimony came to be seriously considered as a form of argument of interest to epistemologists. Cody (1992, pp. 32–3) put forward an analysis of formal testimony of the kind offered by a witness in court. His analysis postulated six requirements of formal testimony, summarized below.

1. It is a form of evidence.
2. It is constituted by a testifier offering his remarks as evidence that we are invited to accept what he says, because he says it.
3. The testifier is in a position to do what is described in clause 2, because he has competence or credentials, or is an authority.
4. The testifier has been given a certain status in the inquiry by being acknowledged as a witness.
5. In law, testimony is normally required to be firsthand, that is, not hearsay.
6. The testifier’s remarks should be relevant to a disputed or unresolved question.

This set of requirements does present a good point of departure for any attempt to study what witness testimony is as a form of reasoning that gives reasons to support a claim. But some of the clauses can be questioned. Clause 3 seems to describe expert opinion testimony, and would thus appear to be too narrow to capture testimony as a whole. Clause 2 does not seem to be entirely clear. It would seem to be better to replace clause 3, and perhaps also clause 2, by the general requirement that the testifier should be in a position to know about what he says. But of course, this way of expressing the analysis makes it depend on what it is for a testifier to be in a position to know about something. Cody’s analysis of testimony does not depend on or utilize the concept of ‘position to know’. In this respect, especially, Cody’s analysis of testimony is different from the one that will be proposed in this book. But even so, it does point a way forward in that it departs from the simpler credulity model and enables us to view arguments from testimony as based on premises that can support a conclusion.

Clause 1 is certainly a central characteristic of witness testimony. But what is evidence, in the legal sense? This question looms large over any attempt to provide an analysis of witness testimony. I have put forward a theory of

legal evidence as a form of argumentation in (Walton, 2002). Legal evidence is defined as a chain of argumentation based on facts collected during an investigation used to resolve a conflict of opinions in a dispute. Central to this way of defining evidence are the notions of relevance and probative weight, deriving from Wigmore and the Federal Rules of Evidence. Relevance is defined with reference to how the chain of argumentation is aimed at the issue to be resolved by the opposed parties in the trial process. This view of evidence fits well with clause 6 of Cody's requirements for testimony. In other respects, however, it deviates from Cody's, because it is based on an acceptance model as opposed to a belief model of rational cognition. Although belief implies acceptance, the converse is not always true, making acceptance a weaker notion than belief.

The problem posed is whether Cody's analysis of testimony can be used as a starting point to construct a theory to explain the structure of appeal to witness testimony as a form of rational argument. The theory needs to take the negative side of this form of argument into account by having the capability to explain how this form of argument can be misleading and fallacious. But to achieve this goal, it will have to be based on a positive account, along the lines of Cody's. This positive account must show how it can be a form of argument that can lead to rational acceptance of an argument as evidence for a conclusion in some cases, of a kind relevant to resolving a disputed question. The aim of the investigation will be to provide an objective framework for the identification, analysis, and evaluation of witness testimony as a form of evidence that can be evaluated as stronger or weaker in specific cases. The investigation will provide an objective basis for refuting the traditional rejection of witness testimony as subjective and therefore worthless as evidence that can ever be trusted or relied on. It will be argued that witness testimony not only can provide a kind of evidence that gives a good reason to support a conclusion, but can also be tested. The [next section](#) begins the investigation by determining the premises and conclusion of this form of argumentation.

2. Appeal to Witness Testimony as a Form of Argument

The first step is to examine a simple example to see how appeal to witness testimony is used in a typical legal case as an argument. An argument is defined as a set of propositions (statements) in which one of the propositions is selected as the conclusion. The conclusion is defined as the proposition that makes a claim that is unsettled, or subject to doubt and questioning. The premises are the remaining propositions in the set. Their function is to give supporting reasons (to a doubter) to accept the conclusion as true. Witness testimony tends not to be seen in this way. To many, it seems more a psychological or empirical form of evidence. So viewed, the focus of evaluation is on whether the witness is telling the truth or not. And the

appropriate method of judging it would then be an empirical examination of the individual. But in law, in a trial, it is recognized that the evaluation of witness testimony takes place by a process of investigation in which facts are collected, the witness is questioned, and the answers of the witness are then used to pursue the investigation further. The process of questioning suggests that appeal to witness testimony is a way of eliciting of new evidence in light of the previous evidence given in a particular case, and the trier is supposed to judge how strong or weak the appeal is as evidence.

Use of witness testimony to draw conclusions in legal argumentation can be structured as a kind of argument with a typical premise and conclusion structure. The conclusion is a proposition, and the premises make up a set of propositions, but each has a special use or function. The conclusion, as indicated above, is a claim, meaning that it is unsettled whether or not it is true, and that the proponent of the argument is trying to settle it by giving reasons. The premises represent the proponent's reasons. In an argument, the claim is put forward, based on a supporting argument step (backing) in the form of a premise, or set of premises. Verheij (2000, p. 6) presented a simple, but highly typical example of a legal argument based on witness testimony as the premise.

Argument 1

Claim: Peter shot George.

Backing: Witness *W* states that Peter shot George.

Argument 1 takes the form of a simple inference with the backing as premise and the claim as conclusion: witness *W* states that Peter shot George, therefore Peter shot George. From a logical point of view, however, argument 1 could easily be questioned, challenged, or even said to be fallacious. Maybe the witness was mistaken. Maybe the witness was lying. Just because somebody says something, does that mean it is true? Given the highly questionable nature of this argument, can we say that the backing is a good reason to accept the claim as true, even if the backing is true? The answer is 'probably not', depending on the context.

The traditional approach to logic emphasized deductive and inductive models or argument, but much more attractive and intuitive was the Toulmin model (Toulmin, 1958), in which the so-called warrant of an inference is regarded as a defeasible rule.

What Toulmin exactly meant by 'warrant' is subject to much controversy, but you can get the idea of what he was driving at by looking at an example of how witness testimony is used in everyday reasoning. I am deciding whether or not to unpack my rain jacket from my backpack as I leave my office, and I see another person coming down the hall. I ask him if it is raining outside, and he answers "yes". I decide to unpack the rain jacket when I reach the exit door of the building. However, when I get to a window, I see that the pavement is wet, but the sun is now shining. We could configure

the original part of the argument something along the following lines as a set of propositions.

Argument in the Raincoat Example

Premise 1: This person just came in from the outside.

Premise 2: He says it is raining.

Premise 3: If someone just came in from the outside, what he says about whether it is raining out there is reliable information.

Conclusion: Therefore it is raining outside.

Premise 3 could be classified as a generalization that can be taken to be true, and thus it performs the practical function of supporting the inference to the conclusion. However, it is possible for both premises to be true while this conclusion is false, as shown by that in fact happened. So the argument is not deductively valid. Many (including Toulmin) would argue that it is not an inductive argument either, at least of the kind based on the statistical interpretation of probability.³ It is not a proof, but an argument, based on a generalization that supports the argument, but not in a way that makes it airtight. Even though the argument is not a decisive proof of the conclusion, it is worth acting on, in the absence of evidence to the contrary.

2.1. *Proof and Argument*

Bench-Capon and Prakken (2005, p. 2) drew the distinction between a proof and an argument by citing the following example: John is old because he is age seventy-five. This is a convincing argument, but not a proof, because it is possible that John is an adolescent tortoise. However, it could be made into a proof by adding the implicit premises that John is a man, that men over seventy are old, and that seventy-five is greater than seventy. Arguments are based on assumptions that might later have to be reconsidered. The purpose of a typical argument is not to compel the hearer to accept the conclusion put forward but to persuade him to accept it, assuming he either is committed to the premises or can be persuaded to accept them. Such arguments have four characteristics (p. 2). First, they are intrinsically defeasible. Second, the goal of the argument is to persuade. Third, arguments leave assumptions implicit. Fourth, more information can be added to arguments.

As it has come to be realized that defeasibility is such an important property for such a lot of legal argumentation, a move away from deductive and inductive forms of reasoning as being the exclusive models of rational argument, and toward a Toulmin-style model, is becoming evident (Bex and Prakken, 2004). There are two kinds of generalizations that need to be considered in legal argumentation. One is the typical major premise of the

³ It is always an issue fraught with technical controversy whether arguments such as the one in the raincoat example can be modeled using probability. This issue is commented on in Chapter 7.

argumentation scheme, which seems to be some sort of defeasible generalization that acts as a warrant, providing the glue that holds the scheme together, enabling it to function as a warrant for the argument. For example, appeal to witness testimony could be analyzed on the Toulmin model as a form of argument that could warrant the transition from witness testimony to the conclusion that the statement uttered by the witness should be accepted as evidence with probative weight behind it. But even so, on the Toulmin model, the appeal to witness testimony could be defeated if new evidence comes in indicating that the witness is unreliable.

As indicated in Section 1, it is necessary to put in some kind of context in which the argument is supposedly being used for some purpose as evidence. In a legal case, for example, this argument would be helpfully framed within what Verheij (2000, p. 5) calls an initial statement. In argument 2, inclusion of the initial statement provides a needed contextual background showing how the inference is being used within a process of investigation.

Argument 2

Initial Statement: It should be investigated whether Peter murdered George.

Claim: Peter shot George.

Backing: Witness *W* states that Peter shot George.

The initial statement provides a context in which the argument that follows (argument 1) can be shown to be relevant. The purpose of using argument 1 in a legal context would be to place it as relevant evidence in the context of an investigation as described in the initial statement. Here then we have a legal argument in the form of a claim and backing and an indication of why such an argument could be relevant in a given case.

Argument 2 seems much more reasonable than argument 1, even though it is open to the same critical questions. Why? The answer is that the backing statement is the kind of evidence you need to collect in a murder investigation. Of course, the witness may be lying, or what he says may not be true. But if he says that Peter shot George, that statement needs to be investigated in any proper investigation. It is relevant, in that context. The fact that it is an inconclusive argument, and highly questionable as it stands, does not detract from its carrying some weight, even though it is not a proof of the claim made. It does provide some evidence, even though carrying the investigation further may defeat the argument.

3. Witness Credibility

Defeasibility is a very important logical feature of appeal to witness testimony as a kind of argument that should be regarded as providing evidence in law. Although the argument justifies the conclusion as things stand, new relevant

evidence could be introduced that defeats it. An argument can be defeated in two ways, by a counterargument that rebuts it, or by one that undercuts it by attacking the reasons it was based on.⁴ The so-called undercutter can be added in the form of a new premise. The expanded argument can be displayed as having the following form.

Argument 3

Initial Statement: It should be investigated whether Peter murdered George.

Claim: Peter shot George.

Backing: Witness *W* states that Peter shot George.

Defeater: Witness *W* is unreliable.

Verheij (2001, p. 5) calls this kind of argument “dialectical”, meaning that it contains supporting reasons as well as attacking reasons that are put forward in a dialogue representing two opposed viewpoints. In this case, there is an argument for the claim that Peter shot George, provided by the backing, but then that argument is weakened by new evidence that attacks the reason for the backing. The possibility that such attacking reasons exist, even in such a common and apparently straightforward example of appeal to witness testimony, suggests that this form of argument is not of the kind so familiar from the deductive paradigm of argument. It is not well analyzed as an argument that can be evaluated as valid or invalid in a one-step analysis.

What has been shown so far is that arguments based on witness testimony look weak, so weak that they may even initially look worthless as providing evidence to support a claim. In some contexts, for example, in an experimental investigation in physics or chemistry, appeal to witness testimony might not be relevant. What is relevant are the facts, and perhaps some mathematical calculations. But in a murder investigation, undisputed facts may be hard to find. For example, the murder may have taken place some time ago, and there may be little physical evidence that is helpful. If there were witnesses to the crime, however, that would be relevant evidence. What

⁴ Pollock (1995, pp. 40–1) contrasted defeasible reasons with conclusive reasons for a claim. Defeasible reasons are *prima facie* reasons, meaning that they are subject to defeaters, counterarguments that defeat the original argument. According to Pollock’s terminology, there are two kinds of defeaters, called rebuttals and undercutters. A rebuttal directly attacks a claim and is a reason for denying the claim (Pollock, 1995, p. 40). An undercutter only attacks the connection between the claim rather than attacking the claim directly, and is only a reason for questioning the claim (p. 41). Pollock offered the following example to illustrate the distinction (p. 41). Suppose an object looks red to me. Even so, it is possible that when an object is illuminated by a red light it can look red when it is not. This possibility is an undercutter of my claim that the object is red. It is not a rebuttal, however, because red objects can look red in red light.

is indicated is that appeal to witness testimony is a useful kind of argument, even though it is defeasible, in a situation of inexact or incomplete knowledge, but where an investigation is required. In other words, the situation is one where a decision has to be made, or at least an investigation has to be made, under conditions of uncertainty.

3.1. Ad Hominem Attacks

One of the most important ways of undercutting testimony is to attack the character of the person testifying. For example, one might argue, “This person has shown a bad character for honesty in the past, so her testimony in the present case is worthless”. In traditional logic, this form of argumentation is called the *argumentum ad hominem* or argument against the person. *Argumentum ad hominem* is a personal attack on an arguer in order to claim that her argument should be given reduced credibility. The three most common subtypes of *ad hominem* featured in the textbooks are the abusive *ad hominem*, the circumstantial *ad hominem*, and the bias type. In the abusive *ad hominem* attack, it is claimed that the arguer has a bad character. Often a bad character for veracity is emphasized, which suggests that an arguer cannot be trusted to tell the truth. Such a suggestion generally has quite an impact on how an audience would judge that person’s argument, as one can easily appreciate. Indeed, many *ad hominem* arguments are so powerful precisely because of this smear effect – even a poorly substantiated innuendo leaves an audience with a lingering feeling of distrust and suspicion, raised by the personal attack. It is perhaps for this reason that *ad hominem* arguments have traditionally been classified as fallacious.

In the circumstantial type of attack, some personal circumstances of the arguer (such as actions that she has personally carried out, or things that she might have said on another issue) are cited as being inconsistent with what she now says. Political campaign advisers are particularly adept at deploying this type of argumentation. Such an attack can make a person look like a hypocrite, and can thus undermine her credibility. For people are hardly very credible if they show themselves not to be committed in their personal practices to the very policies they tell other people to follow. This kind of attack can make a witness seem to lack personal honesty, suggesting that such a person cannot be trusted to tell the truth. The circumstantial type of *ad hominem* is always based on an allegation of inconsistency, but that is used to attack the person’s character.

In the bias type of *ad hominem*, the witness is said to have a personal bias, perhaps in the form of a financial interest or something to gain. For example, suppose a speaker in an environmental debate has said that acid rain is not harmful, but then it is shown that she is employed by a large industrial corporation. Such a corporation has much to lose by environmental controls on air pollution. Hence the worth of her arguments is devalued when her bias is revealed.

Now that argumentation schemes for the various types of *ad hominem* arguments have been developed, there are many issues of evidence law that need to be reconsidered. The *ad hominem* schemes are closely related to other argumentation schemes, such as argument from bias, argument from commitment, argument from inconsistent commitments, argument from position to know, and appeal to expert opinion (Walton, 1996).

All three types of *ad hominem* arguments can be reasonable in some cases, even though the character of an arguer is attacked in a negative way. Character evidence is generally inadmissible in criminal cases. The prosecution should not be able to argue that the defendant is a bad person, and should therefore be convicted of the crime alleged. Rule 404 of the Federal Rules of Evidence states, "Evidence of a person's character or a trait of character is not admissible for the purpose of proving action in conformity therewith", subject to certain exceptions. Among the main exceptions to this rule is the use of character to attack the credibility of a witness.⁵ According to Rule 608, the credibility of a witness may be attacked (impeached) by attacking the character of the witness, but the attack must refer to the character for truthfulness or untruthfulness of the witness. Thus in Anglo-American evidence law, *ad hominem* arguments used to attack a witness can be used. The bias type of *ad hominem* argument, for example, is allowed in court when an attorney is cross-examining a witness. If the witness is being paid to testify for one side, the attorney has the right to ask her about whether she is being paid to testify. Such a question is allowed even though it might turn out to be a bias *ad hominem* argument that would effectively undermine the credibility of the witness.

3.2. Character and Reputation

Character can also be relevant because the best defense a person might have is her own good character. In a case where there is little or no evidence of the truth of an allegation other than the testimony of the plaintiff and defendant, the defendant's only argument may be her good reputation, demonstrated by her past actions and good character shown by them. Thus credibility and character are very important for evaluating the evidential worth of appeal to testimony as a kind of argument. Credibility is also linked to the five critical questions cited above. For example, if someone's testimony in court is found to be biased, or her account is found to be inconsistent, that will immediately cast doubt on her credibility. That in turn will reduce the plausibility of her testimony as an argument.

In everyday conversational argumentation, character is relevant, in several kinds of arguments. One is the *ad hominem* argument described above. Another is the argument that if a person has carried out a certain type of action showing a character trait of some sort in the past, she may carry

⁵ This nature of the exception is more fully detailed in Rules 607, 608, and 609.

out the same type of action again in the future if it fits that character trait. This could be called the propensity argument. This kind of argument is highly controversial in evidence law (Sanchirico, 2001). For one thing, it is defeasible and does not apply to all actions equally. For another, given that it is often a weak argument, it could be a source of prejudice based on stereotypes associated with fallacies and hasty logical leaps to a conclusion that are not justified.⁶ One of the most controversial kinds of cases coming under propensity argument is that concerned with evidence of previous convictions. Empirical studies using previous convictions to predict crime show that such statistics are least reliable in cases of serious crimes such as murder, but that may only be because such crimes are uncommon, in the sense that they are not very likely to be repeated by the same individual.⁷ Most commentators are of the opinion that the danger of prejudicing a jury outweighs any genuine logical weight that evidence of previous convictions carries in a trial (Redmayne, 2002, p. 713). However, there have been many doubts expressed recently about the general inadmissibility of character evidence in law, and the climate of opinion seems to be swinging against this view.

4. Witness Testimony as Fallible Evidence

If witness testimony is defeasible as a form of argument, it is also fallible. Errors can be made in drawing the wrong conclusions from it. But it is also a highly persuasive argument in court, where juries tend to believe that if a witness has taken an oath to tell the truth, the statements asserted by the witness are true. And yet witnesses have often been known to lie.

4.1. *Cases of Testimony Gone Wrong*

The false testimony of Titus Oates (1648–1705) is known in legal history as a classic case. Lane (1971), the best source of the events in Oates' life of perjury, tells us that he began his career by making unfounded charges of sexual abuse of a child against a schoolmaster, William Parker. Parker's reputation was impeccable, but Oates wanted his job. Oates' charge was so detailed and positive that Parker was jailed awaiting trial (Lane, 1971, p. 27). Oates appeared as a witness at the trial and gave detailed testimony that he had seen Parker sodomizing a young man. But Parker could prove

⁶ A wide variety of reasons have been offered for the contention that character evidence is prejudicial in law, many of them highly controversial and some of them dubious (Sanchirico, 2001).

⁷ Crime statistics are "notoriously slippery" and require careful interpretation (Redmayne, 2002, p. 700). In this article, Redmayne carefully scrutinized the various theories concerning empirical support for the value of propensity arguments in criminal law.

he was elsewhere at the time, and the alleged victim could not be produced (Lane, 1971, p. 28). The charges against him were dismissed. Oates joined the Catholic Church and studied for the priesthood, and claimed to have received a doctor of divinity degree from the University of Salamanca, even though he had been expelled. Returning to London, Oates fabricated a story of a vast Jesuit conspiracy to assassinate the king and place the Duke of York on the throne. The possibility of a “popish plot” to take over the country was very worrisome to the public at that time, due to religious strife and political instability. In the atmosphere of public terror, the story of a plot to take over the government found willing hearers. Oates deposited a written account of his version of the plot with a judge and swore to its truth. The basis of the evidence was that the Jesuits had admitted their “most secret counsels” to Oates when he had pretended to be a convert (Lane, 1971, p. 49). After Oates testified before parliament, five Catholic peers were immediately jailed, and later executed. Oates accused schoolmasters of “instilling Popish principles into his pupils” (Lane, 1971, p. 131). In a series of trials, Oates testified against many defendants he claimed to be involved in the plot. Oates’ testimony was accepted as the basis for conviction of some thirty-five innocent persons who were hanged. After the series of trials he was treated as a hero who had saved the country, and was even given a public pension. As the public frenzy died down, however, many holes started to appear in Oates’ story. Eventually, it became clear that the whole story had been a fabrication. In 1685 Oates was finally convicted of perjury.

The fallibility of witness testimony as evidence has been demonstrated dramatically by many recent cases of wrongful convictions where the conviction was based mainly on witness testimony and then later overturned by other evidence, such as DNA testing.

Anderson and Anderson (1998, pp. 8–16) surveyed recent high-profile wrongful conviction cases in Canada to try to find what factors led to the wrongful convictions. The official explanation often offered by police, judges, and bureaucrats is human error, especially unintentional errors made by witnesses. According to Anderson and Anderson (p. 11), this official explanation cannot entirely be discounted, but several more specific factors can be cited. Five such factors are especially worth noting:

1. Witness testimony is crucial to comprehension of wrongful conviction, because juries are inclined to accept the testimony of a witness as fact, and because without it, the prosecution would be forced to rely on circumstantial evidence that most juries would find insufficient for conviction (p. 11).
2. Expert witnesses can “step over the boundaries separating science from advocacy” (p. 15).
3. Judges can be biased in how they conduct a trial or instruct the jury. They may be on the side of trying to maintain public confidence by acting to preserve the reputation of prosecutors or police officers (p. 15).

4. The police are under pressure to get a conviction, especially in murder or rape cases widely reported by the media. They can lose, misinterpret, or overlook evidence that supports the claim that a suspect is innocent (p. 14). They can also exaggerate evidence that appears to point to the guilt of a suspect.
5. In cases of “jailhouse testimony” an inmate is “planted” into the cell of the accused person in order to try to get a “confession”, some remark implying guilt. In exchange for testifying in court, the jailhouse informant gets “special consideration” by the police (p. 14).

These five factors show how witness testimony is an important kind of evidence that can go wrong in various ways. One way it can go wrong is that the witness could be mistaken. Many of the cases of wrongful conviction studied by Anderson and Anderson confirm the hypothesis of Loftus (1979) that there is a psychological bias factor at work. As the witness sees the suspect again and again, he becomes more and more convinced that this suspect is indeed the same person who committed the crime. Another way things go wrong is that the witness can be lying, because he or she is under pressure or has something to gain by giving false testimony.

There are many cases of unjust conviction due to jailhouse testimony that could be cited to show how important a factor this form of witness testimony can be in producing wrong outcomes in trials. But a typical case can be used to illustrate the standard routine. The following case, “Informer Recants, Convict Freed”, is quoted from the *Toronto Daily Star* (February 12, 1999) by Levy (1999, p. 211).

HAMILTON (CP) – A man who has spent nine years in prison for murder was ordered released on bail yesterday while he waits for his appeal to resume after a jailhouse informant recanted his testimony. Chris McCullough, 29, had been convicted of the second-degree murder of Stony Creek School Teacher Beverly Perrin. McCullough had been found guilty and sentenced to life imprisonment with no chance of parole for 18 years. “I can’t believe it”, said his mother Rossi McCullough, her eyes brimming with tears upon hearing her son was free. “I just can’t wait to see him.” A jailhouse informant at the 1991 trial provided explosive testimony in the court of appeal last December about his role in the case. The 40-year-old informant claims he received more than \$8,000 in reward money from police for evidence he now claims was entirely fabricated. The inmate informant also explained how his perjured testimony got him into the witness protection program, where he received between \$10,000 and \$15,000 more in rent and living expenses for himself and his family. Key witness Tammy Waltham also recently recanted her testimony, which pointed to McCullough’s involvement, shortly after the trial, saying she had lied under police pressure to protect her husband, Larry Pearce. Police had told her Pearce’s fingerprints had been found in Perrin’s car. They weren’t. McCullough’s appeal is expected to resume in late March.

There are several outstanding problems with the quality of the testimony used to get a conviction in this case. One is the bias of the jailhouse informant who profited from his testimony. The other is the pressure exerted by the

police who, eager to get a conviction, lied to a witness. So this witness also had something to gain, or so she was led to believe, by testifying in a certain way.

You might think that a jailhouse informant might not have much credibility as a witness, and that a jury would discount his story. But going a little deeper into the background of this kind of case, several underlying considerations are worth noting. The jury may not be aware of the criminal record of the informant. They may not even be aware that the defendant was set up for a jailhouse confession interview with the informant. They may not be aware that the informant was given special treatment, or financial rewards, by the police, prosecutors, or government officials. Of course, a good lawyer would be expected to bring out all this evidence of bias and destroy the credibility of the witness in cross-examination in court. The problem is that in many wrongful conviction cases, that did not happen. There could be many reasons that it did not. Perhaps the police or the prosecution covered up facts about how the witness was rewarded for testifying. Perhaps the lawyer did not do what was required to find these facts. Perhaps these facts were not seen as relevant by the judge. Perhaps the defendant could not afford an experienced and skilled trial lawyer. Perhaps the lawyer did not conduct a cross-examination that asked the right critical questions to reveal the weak points in the story given by the witness. Perhaps the judge or the jury was biased, or for whatever reasons, accepted the testimony of the witness uncritically. For example, perhaps they were unduly impressed, or even confused, by expert witness testimony.

One factor that is important in court is the demeanor of the witness. Does the witness look like an honest and reliable person? But a witness who is lying can often look quite persuasive. Thus the logical structure of the testimony can be the only way to judge it. Important factors, for example, are how the story hangs together, whether it is plausible, and whether it is consistent with known facts. But even a highly consistent story could turn out to be a fabrication. Thus there is a climate of mistrust about appeal to testimony as a form of argument that can provide good reasons to accept a claim. Judging by the cases cited above, that climate of mistrust is justified in some cases. Witness testimony is clearly something to be wary about. On the other hand, in law, as in history, the case inquired into may have happened some time ago, or for various other reasons we may not have access to the facts directly. Thus witness testimony is often a vital form of evidence. We could scarcely begin to objectively and fairly evaluate the evidence relevant to a case without taking it into account. Despite its subjective aspect, and its defeasibility, it is a centrally important kind of evidence, not only in law, but in everyday deliberations on all kinds of practical matters where it is crucial to arrive at decisions on good reasons that support a conclusion. Thus if we could identify the logical structure of appeal to witness testimony as a form of argument, such an objective basis for evaluating evidence based on testimony would be extremely valuable.

4.2. *Categories of Failure*

If we could identify the logical structure of arguments based on witness testimony, it not only would help us get a better grasp of how such arguments are used correctly as evidence, but also would help us better understand how they can default, and lead us to wrong conclusions. Schum (1994) used the Sacco and Vanzetti case, a famous case of wrongful conviction, to illustrate not only how eyewitness testimony works as evidence in court, but also how it is defeasible and can lead to wrong decisions. In this famous case, the two defendants, Sacco and Vanzetti, were found guilty of having shot a police officer named Berardelli on April 15, 1920. The evidence against them was mainly based on the testimony of the arresting officer, Connolly. Connolly testified that during his arrest, at one point Sacco moved in a way that looked as if he was trying to put his hand inside his coat, where a pistol was concealed. In the trial, Connolly's testimony about the incident was used to imply that Sacco had been conscious of his guilt for having committed the murder of Berardelli. Such an argument is not only defeasible. It is also highly conjectural. There could be many possible explanations for why Sacco moved his hand. But in context, one can see how it was used in this case as an argument with some plausibility. If a person puts his hand under his coat when being arrested for murder, and there is a pistol in his coat, this action could be some evidence of his having committed the crime (Schum, 1994, p. 77). A good defense attorney would not have left the issue there, however. She would have cross-examined the witness, and gotten him to concede that many other explanations of Sacco's action were possible.

According to a study of the most common factors leading to wrongful convictions found in the first 70 DNA exonerations (Innocence Project, 2001), the following factors were cited: mistaken identification, police misconduct, prosecutorial misconduct, fraudulent science, bad lawyering, false confessions, microscopic hair evidence, and informants. These categories are not mutually exclusive. For example, bad lawyering may be a category that affects most or all of the problems said to fall under the other categories. But they do give the idea that witness testimony of various kinds, including expert opinion testimony, and how this testimony is evaluated in court, are fairly significant problem areas. It may be that the problem is not so much how this evidence is collected. Error leading to wrong court decisions may arise from what is done with it later in the trial system and what inferences are drawn from it during the process of evaluating it as evidence. What is lacking in studying procedures for evaluating appeals to witness testimony as evidence has been the ability to solve two complimentary problems. One is the problem of identifying a clear set of requirements for the success of an argument appealing to witness testimony as evidence. The other is the problem of finding out how testimony should properly be questioned and cross-examined. What is necessary is to study not only the conditions of success for this kind of argumentation, but also the conditions of failure. It is

necessary to study how arguments based on witness testimony default, what their weak points are, how they go wrong, and how they can be deceptive and lead to erroneous conclusions in some cases.

5. Defeasible Arguments

Defeasible arguments have a different logical structure than the kinds of arguments that one is accustomed to dealing with in the standard kinds of deductive and inductive models of inference used in traditional logic. For someone who is familiar with traditional logical approaches, but is not familiar with the third category of defeasible arguments, it may be hard to even recognize the existence of this third class of arguments. It is best to introduce this third type of argument by contrasting it with the deductive and inductive forms of argument that are so well established. Since the third class of argument is more controversial, it is harder to define all its properties within some well-established framework. The place to begin is to see how it is different from the deductive and inductive types of argument. Much logical reasoning is based on generalizations of various kinds, and so to grasp the differences between kinds of arguments, it is good to begin with the concept of a generalization.

5.1. *Types of Arguments and Generalizations*

Let us go back to the argument in the raincoat example and reconfigure the argumentation in it to bring out some different features that are also part of it.

Argument 4

Generalization Premise: Whatever a witness says is true.

Additional Premise: The witness says it is raining outside.

Conclusion: Therefore it is raining outside.

This above example of an appeal to witness testimony in argumentation seems very simple. But the problem is that the generalization premise, as indicated by the numerous examples shown in this chapter, is simply not true. A universal generalization of the kind highly familiar in deductive logic is falsified by a single counterexample. For example, it can be proved that the universal generalization ‘Whatever a witness says is true’ is false by citing one defeater or so-called counterexample. The defeater could be any example where a witness said that proposition *A* is true, but it turned out that *A* is false. This form of universal generalization could be called the absolute universal generalization. It could be used as a backing in the following argument, for example. Argument 4 is deductively valid, meaning that it is logically impossible for the premises to be true and the conclusion false. It is valid provided that the first premise is taken to present an absolute generalization.

Inductive generalizations that are not absolute can also be used in arguments, as shown by the example below.

Argument 5

Generalization Premise: Whatever a witness says is probably true.

Additional Premise: The witness says it is raining outside.

Conclusion: Therefore it is raining outside.

Argument 5 is not deductively valid. But if we take the generalization to be an inductive one, of the kind commonly used in statistical reasoning, the argument can be taken to represent a kind of inference that is inductively strong. If the premises are true, they can function as part of an argument that makes the conclusion probable to some degree. Inductive arguments are well accepted as representing a distinctive form of reasoning in their own right, as contrasted with deductive arguments.

The third kind of generalization is called the defeasible generalization. An example is the following argument.

Argument 6

Generalization Premise: Whatever a witness says may generally be taken to be true, subject to exceptions.

Additional Premise: The witness says it is raining outside.

Conclusion: Therefore, it can be tentatively taken as true that it is raining outside.

This generalization is not about all witnesses, or even some statistically expressed proportion of witnesses. This generalization asserts that whatever a witness says may generally be taken to be true, even though in some instances, even though a witness says something, it may not turn out to be true. Such a statement is sometimes called a generic statement. It is not based on measurable numerical probability, at least of the Bayesian kind. It can be argued that its logic is that of some kind of probability. But it is not statistical probability of the kind used in the collection and numerical assessment of data. It is more closely related to what is often called “probative weight” in law (Wigmore, 1913).⁸ It is hard to quantify, because numbers of instances do not seem to be the central factor that is important. It is not a matter of exactly how many witnesses lie or are mistaken, or how many do not, or are not. It is more of a matter of taking it for granted that once a witness is cited as a source of saying something, then unless we have specific information to the contrary, one would be tentatively entitled to

⁸ The notion of probative weight derives from the views of Locke and Bentham on evidence and was very well explained with reference to cases and principles of legal evidence by Wigmore. The historical development of the notion has been helpfully outlined by Twining (1985).

assume that the proposition stated by the witness is reasonably acceptable as something to go on, subject to reservations that one might have. If the case is unusual, or there are circumstances suggesting it does not hold in this instance, the original argument can be defeated. For example, suppose that further investigation reveals that the person consulted as a witness was not outside. Once this new information comes in, the argument is defeated. The line of argumentation in such a case can be set out following the sequence illustrated below.

Argument 7

Generalization Premise: Whatever a witness says may generally be taken to be true, subject to exceptions.

Additional Premise: The witness says it is raining outside.

Conclusion: Therefore, it can be tentatively taken as true that it is raining outside.

New Premise: The witness has not been outside.

New Conclusion: Therefore, it can no longer be taken as true that it is raining outside.

Argument 6 was shown to be defeated by the new evidence that came in, presented in argument 7. It does not follow that it is not true that it is raining outside. It is just that we cannot take it any more that argument 6 gives us a good reason for accepting the conclusion that it is raining outside. The reason is that the person we took to be a witness was not really in a position to know whether it was raining outside, because we now know, or have good reason to believe, that he was not outside.

This model seems much more promising as applied to typical legal argumentation, because generalizations on which evidence is based can be subject to exceptions. Thus an argument taken to represent evidence can give a reason to support a claim even if it is potentially subject to defeat as new information comes into a case. It has been recognized by Anderson and Twining (1991) that generalizations of various kinds that seem to be neither deductive nor inductive play a vital role in legal argumentation. These include generalizations about a person's habits or character. They (pp. 368–9) devised a classification system representing five types of generalizations that are especially common in legal argumentation. Case-specific generalizations are those that are or may be established in a particular case. They offered the following example: "In most matters concerning their relationship, Edith dominated Freddie" (p. 368). Scientific generalizations are based on laws of science, such as the law of gravity, or well-established principles, such as the technique of fingerprint identification. General knowledge generalizations are those widely accepted in a community, such as "Transactions in securities traded on the New York Stock Exchange are accurately summarized

in the *Wall Street Journal*". Experience-based generalizations are those such as "Someone who has been treated unfairly by the police may rightly or wrongly conclude that police officers are not to be trusted" (p. 369). Belief generalizations are accepted on a basis of information rather than direct experience, such as "Most Poles are devoted Catholics" (p. 369). All five kinds of generalizations can often act as warrants supporting defeasible arguments that are reasonable. But as Anderson and Twining note (p. 369), they can also be based on prejudices and speculation, making the arguments based on them fallacious.

5.2. *The Tentative Nature of Defeasible Arguments*

The defeasible type of argument tends to be weak and tentative in nature, compared to deductive and inductive arguments. Its function is to shift a weight of presumption in relation to a burden of proof within an investigation, or within some other kind of process in which evidence is being collected and weighed. As noted by Verheij, cited above, what is vital to understanding cases of legal argumentation based on defeasible generalizations is the way any given argument needs to be evaluated in the light of a context of investigation. The basic assumption is that evidence is continually being added into the existing sequence of argumentation. Defeasible arguments only give a small weight of support to a conclusion within a wider context in which evidence is being collected. The argument can default at any point during the process. It is only free from the possibility of default until closure of the process, and its acceptance is tied to closure. This process of collection and use of relevant evidence is continued until the investigation is concluded. The notions of closure and openness of an ongoing sequence of argumentation are vitally important as elements of an initial framework of argument use for the purpose of evaluating defeasible arguments.

Argument 6 is a good candidate as a general model of the form of argument appropriate for argument 2, the typical kind of appeal to witness testimony of the kind used in legal argumentation so often. It represents a fragile kind of argumentation that can be wrong, and can be shown to default, once further relevant evidence is brought into an investigation. From a deductive or inductive viewpoint, it seems to be a worthless argument, or even fallacious. Just because somebody says a statement is true, it does not follow that this statement is true. What we could say in defense of such an argument, however, is that despite its subjectivity, there could be some usefulness in tentatively accepting it, realizing it may later have to be rejected, within the context of an ongoing investigation of some issue that is unsettled.

Appeal to testimony is an argument with some worth or usefulness, under the right conditions of its proper use. But still, what form does such an argument have? Deductive logic is possible because there are known forms of argument. Thus an argument can be judged to be valid if it can be shown to

have a valid form. But appeal to testimony is only a deductively valid argument if what the witness says has to be true in every case. This approach is too idealistic to be of any practical use. Another possibility is that appeal to witness testimony could be an inductive form of argument of the kind called Bayesian, meaning that a number representing the probability of a statement can be attached to it and then changed in light of new evidence. This Bayesian approach is sometimes useful when evaluating legal argumentation, but there are several problems with it in dealing with the kind of evidence typically used in trials, such as appeal to testimony (Allen and Leiter, 2001). The assignments of initial probabilities are subjective, and the Bayesian method provides no method of assigning probabilities to them (Allen and Leiter, 2001, p. 1508). Another problem is that the trier tends to have no good sense of what is going on until the end of a trial. This way of evaluating a mass of evidence does not conform to the Bayesian method, which requires updating probabilities at each step, as each bit of new evidence comes in. Thus defeasible arguments such as appeal to witness testimony are judged contextually in trials in a way that does not seem to conform to either deductive or inductive models of argument. Such an argument can be acceptable at one point in an investigation, and yet defeated at some future point, once the investigation has been carried forward and new evidence has come in or new questions have been asked.

6. Corroboration of Witness Testimony

Witness testimony often takes the form called corroborative, for example, a case in which the testimony of one witness corroborates that of the second witness by agreeing with it in essential details. Redmayne (2000, p. 151) described a case where two items of evidence are involved. First, testimony put forward by the victim pointed to the defendant, and also, later the defendant confessed to having committed the crime. The statement by the victim might have only slight probative value by itself, but the subsequent confession, by corroborating the statement, increases its probative value as evidence considerably. In the usual way of evaluating the evidence, the confession is added to the initial probative value of the memory, so that the two pieces of evidence fit together to provide stronger evidence supporting the conclusion that the defendant committed the crime as alleged.

Another way to corroborate witness testimony is to cite physical evidence that backs it up or defeats it. For example, ballistics evidence that can be proved by scientific lab findings might support what a witness said. Suppose that witness *W* says he saw Peter shoot George and that ballistics tests show that the bullet that was found in George's body was fired from Peter's gun. The latter proposition would, in the normal type of case, be proved by an argument from expert opinion based on testimony from a ballistics expert.

In this type of case, we say that the one piece of evidence corroborates the other. We have two propositions:

- (a) Witness *W* says he saw Peter shoot George.
- (b) The bullet that that was found in George's body was fired from Peter's gun.

The statement (a) is a fairly weak piece of evidence by itself, for all the usual reasons. The witness could be lying, mistaken, and so forth. But once evidence comes in indicating that (b) is true, it seems to make (A) much more plausible. For, after all, if the ballistics tests show that the bullet came from Peter's gun, that makes the witness's story that he saw Peter shoot George much more plausible. This type of case could be called the basic corroboration case. It is a type of case in which one piece of evidence or claim in the case corroborates another, meaning that, once introduced, it makes the other claim more plausible. This type of case, needless to add perhaps, is very common in law.

A problem with evaluating corroborative evidence is that it can be strong up to a point, and then fail, once further evidence is introduced. For example, suppose the accounts given by two witnesses agree very closely, but later it is found they had collaborated to make up a story. At first the agreement between the two accounts would suggest that each instance of testimony supports the other, and makes it more plausible, because they agree. But suppose it was found that the accounts agreed so closely in every detail that it led to a suspicion that they might have collaborated. This kind of example illustrates a key problem with collaborative evidence. Another problem with collaborative evidence is whether the account given by the one witness ought to be seen as strengthening the credibility of the account given by the other, or whether each instance of testimony should be seen as a separate argument for the conclusion supported by both arguments from witness testimony.

Another problem is that the evidence may be counted twice. Redmayne (2000, p. 151) showed that there is a danger of committing the fallacy of double counting by counting evidence twice. Consider again the kind of case in which witness testimony by the victim pointed to the defendant, but then later, the defendant confessed to having committed the crime. Each item of evidence separately leads to the conclusion that the defendant committed the crime. But the confession corroborates the witness testimony, making it seem more credible as an account that describes something that really happened. This could be a fallacy, because the confession is counted twice, first as evidence for the conclusion that the defendant committed the crime, and second as evidence that the witness was telling the truth. To prevent ourselves from committing this fallacy, we must subtract the amount of the value of evidence taken earlier from the confession when we come

to consider the value of the witness testimony as supporting the conclusion that the defendant committed the crime (Redmayne, 2000, p. 151).

There are some issues about recovered memory as evidence that raise questions about double counting of corroborative evidence. Redmayne (2000, p. 150) considered the following case. A complainant C testifies that she has a recovered memory of being abused by D at age twelve, but then later, D confesses that he did abuse C when she was that age. The confession, as we say, corroborates the memory report. However, according to Redmayne (p. 150), the question of what is the inferential process at work is not easy: "At first sight, we might say that the confession increases the probative value of the memory". But there is another interpretation. On this second interpretation, "the confession has considerable probative value which, when added to the slight probative value of the memory, convinces us that the abuse occurred" (p. 151). Redmayne commented (2000, p. 151) that "there is nothing illogical about the first approach", but there is the possibility of committing the fallacy of double counting, by counting the recovered memory evidence twice. The potential error is explained as follows (p. 151): "To put it crudely, if we have taken some probative value from the confession to add to the memory, we must remember to subtract that same amount when we consider the confession". The reason double counting is a fallacy is that the confession could be used two ways as evidence. It could be used to prove that D abused C, as claimed, or it could be used to argue that the recovered memory was accurate in recounting an incident that really took place. But it cannot, we presume, be used as evidence both ways at the same time in the same case. Why not is a bit of a mystery, until we can work out how corroboration of evidence should be analyzed, so that we can identify cases in which double counting of evidence is fallacious.

In Anglo-American law the testimony of a single witness can stand as evidence by itself in a trial, although sometimes it is required that it be supported by some other item of evidence before it is admissible. However, in Scots law, two or more sources are required for witness testimony to be considered evidence. This requirement, called corroboration, meaning 'two or more sources are necessary to prove a case', is a traditional bastion of Scots law (McCannell, 1996, p. 347). McCannell (p. 347) cited Hume's⁹ *Commentaries* (ii, 283) as stating this requirement: "no one shall in any case be convicted on the testimony of a single witness". It can be presumed that it fits with Hume's well-known views on the fallibility of testimonial evidence. In Scots law there are two conflicting theories about how corroboration of witness testimony should be evaluated. Wilson (1960, p. 101) calls these two theories "the old theory" and "the new theory". According to the old theory, every crucial fact in a criminal case must be proved by the evidence of two witnesses. According to the new theory, not every fact needs to be proved by

⁹ Baron Hume was the nephew of the famous philosopher David Hume.

two witnesses, provided the facts proving a criminal charge emanate from two separate and independent sources. The problem for Scots law, as Wilson observed (p. 101), is that neither theory has been stated with sufficient precision to make it possible to clearly decide in all cases whether the two theories are conflicting. However, it would appear that the old theory is generally stronger or more demanding than the new one, meaning that it tends to be harder to prove in many cases.

Thus there are some serious problems about how to model the logic of corroborative evidence as representing a kind of reasoning that is fallible, but that can be fitted in with other evidence in a case that may support or undermine it. Witness testimony needs to be modeled in such a way that it can have what Redmayne calls probative value as evidence in a trial, but does not commit logical fallacies, such as the fallacy of double counting. The problem of double counting arises in expert testimony in cases where the opinion of one expert supports that of a second expert. Should we be strict in such a case in concluding only that each instance of expert opinion testimony supports the conclusion at issue as a separate argument? Or should we also factor in the corroboration effect, whereby the report of the second witness boosts the plausibility of the report given by the first witness by enhancing the credibility of the first witness as a believable source? There seems to be no accepted method at present for evaluating corroborative evidence.

It should be noted that we are using the expression 'corroborative evidence' in quite a broad sense, which can encompass other kinds of evidence as well as witness testimony.

Consider, for example, the scale problem. Today as I left the gym I wanted to check my weight, but saw that there were two scales available. I have a pretty good idea of what my weight normally is, but wanted to see whether I might be one or two pounds heavier or lighter than my last reading. I picked one of the scales, stepped onto it, and saw what my weight was, as measured by that scale. I know that these scales are fairly accurate, but also know from experience that they can sometimes be one or two pounds out. I wondered how accurate this reading was, so to test it, I stepped onto the second scale. It gave a reading exactly identical to that of the first scale. This second reading corroborated the reliability of the first one, for if it had been different, that would have suggested that one of the scales was inaccurate. However, it would seem that corroboration is a relative matter, for is quite possible that both scales are inaccurate, but agree, because both are slightly low or slightly high.

The scale problem is to judge what the worth of the corroborative evidence is in such a case, given that the one scale may be simply repeating the error of the other. It seems that the corroborative evidence has some value, but not very much. If the first scale were tested against a third scale that we know is very accurate, and will not make an error of one or two pounds,

then testing the second scale against that first scale would be much better evidence of its accuracy. But in the absence of additional evidence of this sort, just testing one scale against another, where there is no independent reason to think that one or the other is accurate, only gives the kind of evidence that is of little worth in itself. But still it is a kind of evidence, comparable to the kind of case in which the testimony of one witness supports the testimony of another witness who made a claim that is questionable, but that might be true.

7. Argumentation Schemes for Position to Know Arguments

The kind of argument used when drawing conclusions from witness testimony, whether of the kind commonly used in legal argumentation in a trial, or of the kind commonly used in history, can be modeled using existing resources of argumentation theory. Appeal to witness testimony can be treated generally as a species of what is called ‘argument from position to know’. In some cases, where expert opinion is involved, appeal to witness testimony needs to be modeled as a form of appeal to expert opinion, a form of argument that has already been studied in argumentation theory. These forms of argument may not be a perfect fit to model appeal to witness testimony of the kind commonly used in law. But they do show promise of being adaptable, because they are defeasible. The way they work, as forms of argument, allows contextual factors to be taken into account, as shown below.

The argument from position to know is a common form of argument in which one agent asks a second agent for information that the second party is presumed to possess. A typical everyday example was given in Walton (1996, p. 61). A stranger to a city asks a shopkeeper where the central station is located. The stranger presumes that the shopkeeper would have this information because he works in the area, and is presumably familiar with it. Argument from position to know has the following general form (Walton, 1996, p. 61). The variable *a* stands for an agent, in the sense of the term used in multiagent systems (Wooldridge and Jennings, 1995).

Argument from Position to Know

Major Premise: Source *a* is in a position to know about things in a certain subject domain *S* containing proposition *A*.

Minor Premise: *a* asserts that *A* is true (false).

Conclusion: Therefore *A* is true (false).

Argument from position to know is defeasible within a dialogue, meaning that when such an argument is put forward by a proponent in a dialogue, it can be challenged by the asking of appropriate critical questions by the

respondent. Matching the argument from position to know are the following three critical questions (Walton, 1996, p. 62):

CQ1. Is *a* in a position to know whether *A* is true (false)?

CQ2. Is *a* an honest (trustworthy, reliable) source?

CQ3. Did *a* assert that *A* is true (false)?

The argument from position to know shifts the probative weight in a dialogue from one side to the other. When one of the above critical questions is asked by the respondent, the probative weight is temporarily lifted. Only if the question is answered satisfactorily is the original probative weight restored. The first critical question obviously just asks whether the major premise is true. This question could be phrased more explicitly by analyzing its function in the argument. Suppose, for example, that the agent is in a position to know because she saw or heard something in the past, as in a typical case of eyewitness testimony. What needs to be asked is not only whether she was in the right position at the time to observe the event. It also needs to be asked whether the agent has retained the information. How well does she remember what she reportedly saw or heard? How accurate is her description of the event? **CQ1** should focus on these matters under the heading of being in a position to know.

An excellent illustration of the use of position to know argumentation can be found in the questioning of a former chief of police by the prosecutor in the Martha Moxley case, a long unsolved murder case. The suspect was a nephew of Robert F. Kennedy. One of the witnesses was the former chief of the Greenwich (Connecticut) Police Department. Much information about the trial, including the transcript of the questioning of the former police chief, is available on the Internet (www.courtvt.com) under the title "Who Killed Martha Moxley?" March 28, 2001. The former police chief was shown a photograph of the crime scene with various distances of the objects in the scene that were recorded. He was asked if these measurements were a fair and accurate representation of the crime scene, and he answered "yes". But he admitted that he did not measure these distances himself. The question and answer sequence at that point is quoted below.

Q: How do you know that these are reasonable approximations if you did not measure them yourself?

A: I know this because I was at the scene. It is my recollection that these are reasonable approximations of the scene as I saw them that day. I am certainly not an estimator but I have been over that scene a number of times and these measurements, diagrams represent that scene as I recall it.

The question and answer are a very clear case of the use of argument from position to know. The argument has the conclusion that the measurements given are fair and accurate approximations of the real crime scene. One

reason is that the witness said so. But the other premise is that the witness was in a position to know about the crime scene, and in particular, the distances between the various objects in it. He was there, and as he put it, he was over the crime scene a number of times.

Some interesting variants on position to know argumentation can be exhibited by considering some other examples. Suppose the police are questioning a murder suspect, and the suspect reveals specific details of the crime that (presumably) could only be known to the murderer. Only the murderer was in a position to know these things. Therefore, the admissions by the suspect are evidence that he is the same person as the murderer. Of course this kind of evidence is defeasible. The suspect could have a vivid imagination, and it could just be coincidence that the details he conjures up happen to match those of the murder. It could even be that studying the police interrogation might show that the interviewer used loaded questions that guided the suspect toward answering questions in a way that seemed to indicate that the suspect showed knowledge of the details of the crime. Or it could be that the suspect was reported to have such knowledge by a jailhouse informant who acquired it in a surprisingly clever way. According to Levy (1999, p. 220), jailhouse informants are “known to have information to use against an accused from media reports, from family and friends, jail visitors, trials and transcripts, co-accused, through impersonation; and through materials left by defence council with the client such as Crown disclosure.”¹⁰ Hence this kind of evidence can be misleading, and should be seen as inherently weak and presumptive in nature. Even so, it can be important legal evidence that carries probative weight in an investigation or a trial.

In some cases, argument from position to know is used in backward or abductive fashion, based on an inference from the presumed facts to a best explanation. For example, suppose that Professor Smith sends some E-mail messages containing information about a planned trip that he has told nobody else about. Suppose he has not communicated this information in any way, except through these E-mail messages. Suppose then that Professor Smith’s student, Ernie, during a conversation, asks Smith when he is leaving on this planned trip. Smith might draw the conclusion that Ernie has been reading Smith’s E-mail. He might then confront Ernie, and ask him whether he is guilty of this act of reading his private communications without his permission. The inference used by Professor Smith in this case is a kind of reverse position to know argumentation. The assumption is that anyone who knows about the trip could only have known it by reading the E-mail. Given the premise that Ernie knew about the trip, a conclusion

¹⁰ Levy (1999, p. 219) observed that in many cases of testimony from a jailhouse informant, the “mantra” of the prosecution is “that the informant should be believed because he/she is relating details that only the real culprit could have conveyed.”

follows by defeasible reasoning: Ernie must have been reading Professor Smith's E-mail. This argument is defeasible. It could be that Ernie only appeared to know about the trip, but had mistakenly confused it with some other trip that Smith had taken earlier. Or it could be that someone else had read the E-mail messages and told Ernie about them. The argument in this case can be also seen as an instance of abduction, or inference to the best explanation. The (presumed) fact inferred from the conversation is that Ernie knew about the trip. But how could he have known about it, since E-mail is private, and he did not have Smith's permission? The best explanation, all else being equal, is that he must have read Smith's E-mail without Smith's permission. Of course this explanation is only a hypothesis or guess. But it is strong enough as a plausible conclusion to warrant asking Ernie to explain how he appeared to know about the trip.

7.1. *Arguments from Expert Opinion*

Many position to know arguments are different from the above cases in that they depend on expert opinion. However, the form of argument known as appeal to expert opinion can be analyzed as a species of position to know argumentation, even though it is a distinctive subspecies in its own right. The argumentation scheme and matching critical questions for this form of argument have been presented in Walton (1996, p. 65). An even fuller analysis of this form of argument has been given in Walton (1997, p. 210), but just a simplified summary of the main structure is all that is needed here.

Appeal to Expert Opinion

Major Premise: Source *E* is an expert in subject domain *S* containing proposition *A*.

Minor Premise: *E* asserts that proposition *A* (in domain *S*) is true (false).

Conclusion: *A* may plausibly be taken to be true (false).

Appeal to expert opinion, as a species of position to know argumentation, is a defeasible form of argument that can carry probative weight. Unless the expert source is treated as all-knowing, the argument is not deductively valid. Epistemic closure can be invoked in some cases, meaning that it is assumed that the knowledge base is complete and that further investigation is closed. As noted above, the notion of closure is important in studying defeasible argumentation schemes. But in most cases, it is better to see appeals to expert opinion as open to further questioning and investigation. Realistically speaking, experts are fallible, and what they say should not be taken as representing the final word. The recent convoluted history of expert testimony as a form of evidence in American law has underlined the difficulty of dealing with this form of evidence.

Haack (2003, pp. 237–64) outlined the history of legal developments in scientific testimony in American law, beginning with the early cases in which jurors were selected who were supposed to possess expertise on the matter being tried. In one such case, a jury of butchers was selected to try an accused for allegedly selling putrid meat (p. 237). Spanning the later cases, where expert witnesses were called by each of the opposed parties, and then subject to cross examination (p. 237), she presents a chronicle of key decisions, from the Frye Rule (1923) to the Federal Rules of Evidence (1975), going up to the revised Federal Rules of Evidence in 2000. She describes the interval between the Frye Rule and the present as one of continued legal disputation about rules governing expert testimony in trials in which science has become entangled with law in a “bramble bush”.

According to Haack (2003, p. 15), the fundamental problem stems from the conflict of cultures between the adversarial system of American law and the open-ended fallibilism that is characteristic of the methodology of scientific research. Scientific inquiry is an attempt to discover the truth of some question by discovering new evidence available and then adding it to the collective mass of scientific results built up over the centuries. This process never ends. It is open-ended, and scientific reasoning is always subject to potential defeat (falsification) by new results or better theories. On the other hand, a trial in law is designed to come to a definite conclusion that resolves the conflict, and without undue delay, even though not all the facts may be known. What Haack describes (2003, p. 18) as a clash between how these two cultures evaluate evidence can be seen from the perspective of argumentation theory as a difference between two investigative procedures. Each evaluates argumentation in a different way, using different methods, different standards of evidence, and different burdens of proof.

There is a natural tendency to defer to experts, treating what they say as beyond questioning. Indeed, appeal to expert opinion has traditionally been treated as a fallacy in logic. The powerful psychology of the halo effect leads us to naturally defer to experts. The skill of questioning an expert in a critical but productive way is a response that typically has to be learned. We often tend to go to one extreme or the other, seeing appeal to expert opinion either as a perfect argument that cannot be challenged, or a fallacious argument that cannot be trusted. Seeing it as a defeasible argument requires steering a middle way between these two extremes. As a position to know form of argument, it is fallible. But in the absence of exact knowledge that can be directly obtained, we do often (and should) draw a tentative inference based on an expert opinion.

Awareness of the defeasible nature of appeal to expert opinion is vital to coming to understand how it can be employed correctly as a practically useful form of argument. In the most common kinds of cases where it is used, the appeal to expert opinion should be regarded as having a certain standing or probative weight, but also as open to critical questioning. The

following six basic critical questions for the appeal to expert opinion have been set out in the analysis of Walton (1997, p. 223):

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* personally reliable as a source?
5. *Consistency question*: Is *A* consistent with what other experts assert?
6. *Backup Evidence question*: Is *A*'s assertion based on evidence?

Even if all six critical questions have been answered successfully, the investigation should not necessarily be regarded as closed. There can also be various critical subquestions under each of the six basic critical questions. Thus the evaluation of an appeal to expert opinion takes the form of a dialogue in which questions are asked and answered. A detailed analysis of the structure of critical questioning for appeal to expert opinion has been carried out in Walton (1997). One issue that deserves comment is the distinction between the first question (of credibility) and the fourth question (of personal reliability). These two factors seem a little hard to sort out, at first. Credibility has to do with how well the expert is (presumably) in a position to know in relation to the claim made by the expert. Credibility is a property of an agent. An agent is a goal-directed entity that can take autonomous action on the basis of information that it possesses, and can then correct its actions when new information comes in. An agent can have various characteristics that relate to its reliability as a source (Wooldridge and Jennings, 1995). One particular property an agent can have is that of honesty, meaning that the agent can be presumed to tell the truth of a matter, or at least to offer only information that it thinks to be true. An agent is personally reliable as a source only if it has shown a character for honesty. Honesty may be presumed, however. So in such a case, what happens is that an agent's perceived dishonesty, for example, if it is caught in a lie, will lead to a devaluation of its perceived reliability.

It has now been indicated how argument from position to know and appeal to expert opinion can be well-defined forms of argument. Each has its characteristic argumentation scheme and its set of matching critical questions. In typical cases in which these forms of argument are used in legal discourse, they are not deductively valid or inductively strong. Instead, they are defeasible arguments that carry some probative weight as tentatively acceptable, but are subject to critical questioning that can make them default. They are weak arguments that can go wrong, or even be fallacious in some cases. Despite their typical frailty, they can be extremely important kinds of evidence that can bear on an investigation in which there is a mass of many individually weak arguments on both sides of a disputed issue. The big question to be posed now is whether appeal to witness testimony is simply a special instance of position to know argument (along with appeal to expert

opinion as a variant), or whether it is a separate argumentation scheme in its own right.

8. The Form of Appeal to Witness Testimony as an Argument

What seems to make appeal to witness testimony special or distinctive as a species of position to know argument is the notion of testimony. Testimony indicates that the source has made a special point of going on record to make a claim that will stand up under scrutiny. The term ‘testimony’ indicates a stronger commitment to the truth of what is asserted than would be typical of many common instances of position to know argumentation. What seems to be distinctive of appeal to witness testimony as a form of argument is that the witness is committed to telling the truth as she or he knows it. Thus an appeal to witness testimony assumes as a premise, or normal presumption, that the witness is telling the truth. Any indication that this presumption fails, in a given case, will strongly impact the appeal to witness testimony. In many common cases of position to know argumentation that would not normally be classified as appeals to witness testimony, this presumption of truth-telling is less significant. For example, consider once again the case of the shopkeeper telling a questioner the location of the central station. The shopkeeper could be lying. But that factor is not such an important consideration, in the general run of cases. If the questioner is misdirected, she can always ask the next passerby for better directions. However, especially in legal cases of testimony, the assumption that the witness is at least trying to tell the truth is centrally important.

Let us reconsider the last example of an argument above about Peter’s having shot George. How the presumption that a witness is honest is defeasible could be illustrated by expanding the sequence of argumentation in a typical kind of case a little further.

Argument 8

Initial Statement: It should be investigated whether Peter shot George.

Claim: Peter shot George.

Backing: Witness *W* states that Peter shot George.

Generalization: Witnesses normally tell the truth.

Subconclusion: Witness *W* is telling the truth.

The possibility exists that a witness could lie. But unless there is some evidence indicating that the witness is not telling the truth, it is a reasonable inference to draw the subconclusion that witness *W* is telling the truth. This subconclusion then backs the claim that Peter shot George. But the inference in this case is comparable to the one in the Tweety case. It shifts a so-called probative weight onto the claim, but that weight can be removed

or lessened by new evidence that might come into the case. The importance of the initial statement in evaluating the argument is thus revealed. The context of use of the whole sequence of argumentation that follows the initial statement is that of an ongoing or open investigation. New evidence can come in at any point in the sequence, until the investigation is closed. Defeasibility is a vital characteristic of argumentation where the context is that of an open investigation. Thus Verheij was right to link the defeasibility of the appeal to witness testimony to what he called its dialectical aspect. Such an argument needs to be judged in the context of a given process in which there is doubt or disagreement about some central proposition that is at issue. There are two sides to the process, and each side has a so-called burden of proof. The outcome is in a balance with a weight of presumption on both sides. The function of a defeasible argument, such as an appeal to witness testimony, is to bring forward a small weight of evidence that can tilt the balance slightly to one side or the other. But the argument is open to defeat as new evidence comes in, until the process of investigation is finally closed.

Witness testimony is useful as a kind of argumentation under certain conditions. First, there is a certain situation or set of data or presumed facts that we as investigators need to know about. We do not have direct access to these data. For example, they may be in the past, and we cannot directly re-experience the past. But some living person may have had access to the past situation we are interested in, and may have observed it, or at least we may have reason to think that she has. Even if the person is not living or otherwise available, she may have recorded her impressions of what she saw. In such a case, there is a possibility that we could come to know about this set of data indirectly, through this person we presume to have been a witness of it. But two key assumptions need to be made. The first is that we must assume that this person really was in a position to get access to these data directly at the time. Part of accepting that the witness is in a position to know is that we need to assume that she still has this information. She would need to remember it reasonably well. The second key assumption is that she can and will convey the information to us with reasonable truthfulness.

These two assumptions about appeal to witness testimony are, in turn, based on other even more fundamental assumptions. One is that the witness has properties of what is called an agent in multiagent systems in computing (Wooldridge and Jennings, 1995). Agents can interact with other agents in dialogues. Agents can carry out actions. It will be necessary to view a witness as an agent of a certain kind. And it will be necessary to see the questioner of the witness as an agent, as well. These two agents need to be able to engage in orderly goal-directed conversations (dialogues) with each other. A witness, as an agent, must have the capability for knowing about presumed facts and must have the capability of relaying these facts to another agent. In other words, there must be a kind of communication between the witness as an

agent and the questioner who, as another agent, tries to get access to these facts through questioning the agent. Otherwise, appeal to witness testimony as a form of argument makes no sense at all.

Based on this analysis of its central structure, the appeal to witness opinion can be said to have the following basic form of argument. The variable *W* stands for an agent that is a witness. A witness is an agent that has incoming information about things it can perceive as facts or data and that can relay that information to another agent. The variable *A* stands for a statement (or proposition, which is taken to be an equivalent term). The generalization is a general rule that links the premises to the conclusion (Bex, Prakken, Reed, and Walton, 2003). It is not an absolute, universal generalization, but is taken in the form of argument below as a defeasible conditional.

Argument from Witness Testimony

Position to Know Premise: Witness *W* is in a position to know whether *A* is true or not.

Truth-Telling Premise: Witness *W* is telling the truth (as *W* knows it).

Statement Premise: Witness *W* states that *A* is true (false).

Generalization: If a witness *W* is in a position to know whether *A* is true or not, and *W* is telling the truth (as *W* knows it), and *W* states that *A* is true (false), then *A* is true (false).

Conclusion: Therefore (defeasibly) *A* is true (false).

The first three premises are joined together as a conjunction that appears as the antecedent of the conditional expressed in the warrant. The warrant functions as an additional premise. Thus the inner structure of appeal to witness opinion as a form of argument is that of the following defeasible *modus ponens* (DMP) type of inference.

If witness *W* is in a position to know whether *A* is true or not, and *W* is telling the truth (as *W* knows it), and *W* states that any proposition is true, then *A* is true.

Witness *W* is telling the truth (as *W* knows it).

Witness *W* states that *A* is true.

Therefore *A* is true.

Since this inference has the *modus ponens* form, many might think that it is deductively valid. In traditional logic, it is the accepted conventional wisdom that all inferences having the form of *modus ponens* must be deductively valid. But the above inference is not deductively valid, according to the unconventional account presented here. It is a defeasible inference, because the first premise is a defeasible conditional. Thus it is a structurally correct form of inference that can be used to transfer a probative weight from the premises to the conclusion. But it is not deductively valid.

8.1. *Strict and Defeasible Modus Ponens Arguments*

An example of DMP can be found in the logic textbook *Introduction to Logic* (Copi and Cohen, 1998, p. 363). Following the traditional logic textbook approach, they claim that the following argument is deductively valid because it has the *modus ponens* form.

If he has a good lawyer then he will be acquitted.
 He has a good lawyer.
 Therefore he will be acquitted.

Copi and Cohen translate the first premise from natural language into logical symbolism using the material conditional, defined as only false where the antecedent is true and the consequent false. On this definition, if both premises are true, and the argument is deductively valid, the conclusion must be true too. But is this particular argument well represented as being deductively valid? After all, in the real world, you can have a good lawyer, but still not be acquitted. It would seem to make more sense to translate this argument in a different way, not one that makes it deductively valid.

The usual approach in AI is to use a nonmonotonic logic to represent this kind of argument, as opposed to using classical deductive logic, a monotonic system of reasoning. A monotonic inference is one in which the conclusion drawn from the set of premises will be preserved as a conclusion even if the premises are supplemented by new information. The kind of reasoning illustrated in the Tweety case is nonmonotonic, because new information that comes in, such as the information that Tweety is a penguin or Tweety is a baby bird, can defeat the old conclusion that Tweety flies. Once the new premises are added to the inference, the original conclusion must be retracted. To model this kind of reasoning we need a nonmonotonic logic. Horty (2001) has presented a survey of formal nonmonotonic reasoning systems.

Schum (1994) developed a theory of reasoning about evidence based on Bayesian probabilities, Wigmore's theory of evidence, and Toulmin's analysis of inferences. An important feature of Toulmin's model of reasoning is the concept of an inference warranted by a generalization that is subject to exceptions and ancillary evidence that supports a conclusion. Schum offers examples of generalizations such as "The events reported by police officers testifying under oath usually have occurred" (Schum, 1994, p. 87). These kinds of generalizations can apply to the particulars of a case, generating a conclusion by a process of inference in which new information can strengthen or weaken the inferential step from the premises to the conclusion.

Verheij (2001, p. 232) theorized that argumentation schemes of the kind typically used in law can be modeled using such defeasible generalizations (1999, p. 113). He based his theory on a distinction between two rule-based

forms of inference. The first one is the deductively valid *modus form* of argument familiar from deductive logic. It can be called strict *modus ponens* (SMP), since the rule in the first premise is strict, meaning it admits of no exceptions. One counterexample defeats it.

Strict Modus Ponens (SMP)

As a rule, if P then Q

P

Therefore Q

SMP is monotonic, because it always remains valid, not matter how much new information enters into consideration. There is also another type of inference that is similar to SMP, except that exceptions to the rule are allowed, and will not defeat the inference itself, even though they may call for retraction of the conclusion, once the exception becomes known.

Defeasible Modus Ponens (DMP)

As a rule, if P then Q , but subject to exceptions

P

No exceptions are known yet

Therefore Q

DMP is a nonmonotonic type of inference, because it can fail as new information comes in. If an exception to the rule becomes known, as applied to the case at issue, the conclusion may have to be retracted. The problem we now have is when to use which form of argument.

On Verheij's model (2000, p. 5), in an instance in which only strict rules are involved, SMP can be applied, but DMP needs to be applied in an instance where both strict rules and rules not admitting of exceptions might possibly come into play. This is a policy of being on the safe side. For example, if the given argument is based on a universal generalization about all triangles, without exception SMP can be applied. But DMP needs to be applied to a case where the generalization might be subject to qualifications.¹¹ It is a view maintained by Verheij that many of the most common argumentation schemes found in arguments in law have the DMP form. Argument from witness testimony is a case in point. It can be cast into doubt by asking critical questions.

¹¹ Terminology remains unsettled. Some have the opinion that DMP is not really a *modus ponens* type of argument, and therefore should not properly be called a *modus ponens* of any sort. Others may concede that DMP can be categorized as a kind of *modus ponens* inference, as long as the distinction between it and the deductive form SMP is carefully drawn.

9. Factors in Evaluating Witness Testimony

What kinds of critical questions would be appropriate for evaluating the form of argument called appeal to witness testimony? Of course, one of the premises of the appeal to witness testimony cited above is the assumption that the witness is telling the truth. Witnesses are examined in courts and make statements under an oath to tell the truth. As indicated by the truth-telling premise, there would be a general presumption that the witness is telling the truth. So that is one obvious critical question. This premise can be a source of default if critical questions can be asked that raise doubts about whether it holds in a case. In legal examples, an appeal to witness testimony can go through several phases. First it could appear reasonable, and then it could default, as a doubt was raised.

The sequence of argumentation in the case of Peter's allegedly having shot George can be further expanded to illustrate complex argumentation as typically used in this kind of case. Suppose, for example, that evidence is introduced that shows that witness *W* had a good reason to lie. Then the sequence of argumentation might run as follows.

Argument 9

Initial Statement: It should be investigated whether Peter shot George.

Claim: Peter shot George.

Backing: Witness *W* states that Peter shot George.

Generalization: Witnesses normally tell the truth.

Subconclusion: Witness *W* is telling the truth.

Defeater: Witness *W* has a reason for lying.

Although the defeasible generalization that witnesses normally tell the truth has been a reasonable premise to accept prior to this point, introduction of the defeater undercuts the support previously given to the claim by this generalization. Thus the inference to the subconclusion is cancelled, removing the support for the claim that Peter shot George.

Similarly, questions can be raised on whether the position to know premise holds in argument 9. For example, suppose it was a dark night, and the witness could not have seen the details of the crime in the way he claimed. The major premise would default and the argument would fail. This factor is made evident in the Federal Rules of Evidence.¹² On the basis of Rule 602, the objection "lack of personal knowledge" may be made in a trial. For example, if the examiner asks a witness, "Where was Mr. Jones at 8:00 p.m. on July 12?" the cross-examiner may object by saying, "Objection, no showing of

¹² The Federal Rules of Evidence will turn out to be important in understanding witness testimony as a form of evidence in Anglo-American trials, and their role will be explained in Chapter 3, Section 7.

personal knowledge” (Park, Leonard, and Goldberg, 1998, p. 84). To avoid such an objection, the examining lawyer needs to lay a foundation for the question by establishing the personal knowledge of the witness before asking the question. Thus the position to know premise is a very important assumption in the presentation and questioning of witness testimony as evidence in the context of a trial. The statement premise is significant because the exact wording of what the witness says can be vitally important. Often the wording of a claim suggests conclusions by implicature or innuendo that the witness may deny, or least may not testify to, as revealed by questioning.

Anderson, Schum, and Twining (2005) have used the method of Wigmore charts to analyze evidence in legal cases. They view (p. 98) our adversarial system as a procedure that uses principles of logical reasoning to resolve disputed questions of fact. They see testimonial evidence as based on a number of factors. The first factor (p. 65) is that the witness is claiming personal knowledge of the occurrence of the event in question. The second is the requirement forbidding hearsay. The problem here is that if the witness cannot be questioned directly, what he says may have no better status than rumor or gossip (p. 66). The third factor is that of inferences drawn from what the witness claims to observe. The fourth factor is the credibility assessment of a testimonial assertion. They consider credibility under three additional factors: observational sensitivity, objectivity, and veracity (p. 68).

9.1. *Other Systems*

ADVOKATE is a software system for assessing the credibility of witnesses in forensic and legal investigations (Bromby and Hall, 2002). The ADVOKATE acronym refers to the following eight witness reliability factors to be examined in a case (p. 148):

- A: amount of time the witness observed the perpetrator.
- D: distance from the witness to the perpetrator.
- V: visibility conditions at the time.
- O: whether the line of observation was impeded.
- K: whether the perpetrator was known to the witness.
- A: any reasons for remembering the event or the perpetrator.
- T: time elapsed since the event.
- E: errors in the description of the perpetrator.

According to Bromby and Hall (2002, p. 148), witness reliability inferences can be made from these factors, and what they call “defeating values” are findings in the above categories that provide evidence that a witness is unreliable. Clearly these factors are important for evaluating witness testimony, and the question is how they can be fitted to the analysis above based on the argumentation scheme. The answer is that these factors, excluding E, which is already covered by the critical questions, relate specifically to the position to know premise. They relate to the evaluation of how strong or

weak the position to know premise is in any given case. Accordingly, the following list of seven critical questions can be subsumed as raising kinds of doubts about implicit assumptions of the position to know premise. All are expressed in terms of the witness observing an event, suggesting visual observation, but appropriate adjustments can be made for other forms of sensory information such as hearing.

PK1: What is the length of time since the witness observed the event?

PK2: How close was the witness to the event?

PK3: How favorable were the visibility conditions at the time?

PK4: Was the line of observation impeded?

PK5: Was the person observed known to the witness?

PK6: Were there reasons (other than PK5) for remembering what was observed?

PK7: How much time has elapsed since the event?

In addition to these critical questions, there are a number of other factors identified by Schum (1994, p. 107) that need to be taken into account. Schum classifies these under three headings: observational sensitivity, objectivity, and veracity. Under observational sensitivity there are such factors as sensory defects, general physical condition, conditions of observation, and quality of observation. Under objectivity there are such factors as expectations, bias, and memory-related factors. Under veracity there are such factors as previous convictions for crimes of dishonesty, other misconduct related to dishonesty, and character evidence regarding honesty. Schum and Morris (2007) distinguish between two primary categories of assessing witness testimony called competence and credibility. Under competence they cite four factors: “appropriate sources”, “in a position to observe”, “understanding of what was observed”, and “ability to communicate”. Under credibility they cite the three factors noted above: veracity, objectivity, and observational sensitivity. In their analysis, they emphasize that these two major categories are frequently confused, leading to serious inferential errors. This method of classification is based on experience regarding witness testimony accumulated in our legal system since the year 1352 (Schum, 1994, p. 106). Some of these factors appear similar to the factors cited by *ADVOKATE*, while others suggest additional critical questions. It would seem then that in addition to the critical questions we have cited above, others need to be considered as well.

In the study of argumentation schemes, at present it is still an unsolved problem how to manage critical questions, in several respects. One problem is whether the critical questions correspond to unstated assumptions in the premises of the scheme. Another is whether there can be critical subquestions under the main critical questions. Another is how many critical questions have to be answered before an argument fitting a scheme is completely proved so that it can no longer be defeated as more information

comes in. Finally, it may well be that argumentation from witness testimony is closely related to, or even based on, other argumentation schemes that have critical questions attached to them. We now turn to some consideration of the roles of these additional schemes.

9.2. *Fact and Opinion*

The argumentation scheme for argument from witness testimony takes us part of the way along the road to vindicating witness testimony as a kind of evidence that can give a good reason to support a conclusion. It is the first step in the process of repudiating the ancient distrust of this form of evidence that we found expressed in Plato, in Section 1 above. If witness testimony has a structure as an argumentation scheme, it is not just purely subjective. It does represent a form of rational argumentation. But if so, how can appeals to witness testimony be tested as evidence? How can they be verified or falsified by objective or reproducible evidence of some sort? The first step toward answering these questions is the set of five critical questions above. The critical questions can be used to test the appeal to witness testimony as presented in a given case by probing into the weak points in the inference linking the premises to the conclusion. But much more needs to be done to see how this process of probing and testing can be carried out in some systematic way.

The distinction between fact and opinion is an important one underlying any analysis of witness testimony as a kind of evidence. This distinction is not absolute, but Whately (1863) expressed it in a useful way. According to Whately's account (p. 38), a matter of fact is one that can "conceivably be submitted to the senses" so that, in principle, there should be no disagreement between persons who witnessed it. A matter of opinion (p. 38) is one that calls for an exercise of judgment on the part of witnesses who might disagree about the matter. On this basis, Whately (1863, p. 39) distinguished two kinds of appeal to testimony:

When the question is as to a fact, it is plain that we have to look chiefly to the honesty of a witness, his accuracy, and his means of gaining information. When the question is about a matter of opinion, it is equally plain that his ability to form a judgment is no less to be taken into account.

In some legal cases, witnesses are called to testify on factual matters, and the appeal to witness testimony is not based on the assumption that the witness is an expert. In other cases, the witness is called as an expert in some domain to testify. In this kind of case, the witness is given more freedom to draw inferences, because the opinion is often one that calls for judgment. This latter kind of appeal to witness testimony is therefore a special type that needs treated somewhat differently as a kind of evidence. The above argumentation scheme for appeal to witness testimony can apply to both kinds of cases. But to recognize the special status of appeal to expert opinion

as a basis for witness testimony, another argumentation scheme is set out. This argumentation scheme combines appeal to expert opinion with appeal to witness testimony. *E* is an agent.

Appeal to Expert Witness Testimony

Expertise Premise: Witness *E* is an expert in subject domain *S* containing proposition *A*.

Statement Premise: *E* asserts that proposition *A* is true (false).

Conclusion: Therefore (defeasibly) *A* is true (false).

The critical questions for appeal to expert opinion testimony are the same as the critical questions listed above under the argumentation scheme for appeal to expert opinion. In appeal to expert witness testimony, the truth-telling premise is notably absent. This factor has lesser prominence and is dealt with under the trustworthiness critical question. This differentiation between the two types of appeal to witness testimony follows Whately's analysis, which holds that honesty of the expert witness is not such a primary factor as good judgment. In the argumentation schemes for appeal to expert testimony and appeal to (nonexpert) witness testimony, the critical questions reflect this analysis.

The problem is to know where the facts came from. We return to this problem in Chapter 5, where it will be argued that the facts come into argumentation through a type of dialogue called information-seeking dialogue. Right at this point, however, in Chapter 1, we need to look at more immediate sources of factual evidence upon which appealed to witness testimony is based.

9.3. *Perception and Memory*

The next problem to be taken up is whether the five critical questions for argument from witness testimony are adequate to address all the credibility attributes identified in the PK questions of *ADVOKATE* and the comparable factors identified by Schum (1994). To solve this problem, we have to see how argument from witness testimony is embedded in two other fundamental argumentation schemes. It will be shown in Section 9.3 how the PK questions relate to these two additional schemes.

In Pollock's system of artificial intelligence (1995), the accumulation of knowledge is supported by reasoning in three stages. First, perception is applied to memory, yielding beliefs, and memory is used to record them. Second, induction infers general rules from these beliefs and inductive reasoning derives new beliefs from the original set. Third, the set of beliefs built up as knowledge persist over time, due to memory. Such reasoning is taken by Pollock to be defeasible, and therefore subject to improvement and correction through process in which old beliefs are replaced by new ones. Pollock's red light example (1995, p. 41) shows how this process works.

For instance, suppose x looks red to me, but I know that x is illuminated by red lights and red lights can make objects look red when they are not. Knowing this defeats the *prima facie* reason, but it is not a reason for thinking that x is *not* red. After all, red objects look red in red light too. This is an *undercutting defeater* (Pollock's italics in both instances).

The sequence of argumentation in Pollock's example is based on the defeasible generalization that when an object is illuminated by a red light this can make it look red even though it is not. This generalization defeats the original one that objects that look red generally are red. The object may still be red, for all we know, despite the counterargument. But a new fact undercuts the original argument by removing the support of the inferential link between the premises and the conclusion.¹³

Pollock formulated two defeasible rules and identified them as the basis of the reasoning used in the sequence of reasoning in the red light example.

Perception Rule: Having a percept with content ϕ is a *prima facie* reason to believe ϕ .

This rule represents one of the most common and important forms of legal evidence. A legal example offered by Prakken (2003, p. 858) showed how common such forms of argument are in legal argumentation.

Fact: This object looks like an affidavit.

Generalization: If something looks like an affidavit, then it is an affidavit.

Conclusion: This object is an affidavit.

This argument, though defeasible, surely represents a common form of legal reasoning. Suppose the document in question is in a pile of affidavits that are evidence in a trial. There may not be enough time to check the document carefully to see if it meets all the requirements for being an affidavit, but it may be reasonable to go ahead on the reasonable assumption that the document is an affidavit. In Walton (2006a), the following argumentation scheme is presented to represent this kind of reasoning.

Argument from Appearance (Walton, 2006a)

It appears that this object could be classified under verbal category C .

Therefore this object can be classified under verbal category C .

¹³ In Pollock's system, these generalizations would be inductive. However, the word 'normally', inserted into them in the analysis above, suggests otherwise, indicating a contextual dependence on plausible expectations that are reasonable, but that cannot be realistically calculated by attaching numbers to the propositions and doing calculations using Bayesian axioms for the probability calculus.

This form of argument from appearance could be modified to fit a case of witness testimony evidence by changing the syntactical categories and variables slightly as follows, producing a secondary version of the scheme.

Argument from Appearance (New Version)

Witness *W* claims proposition *A* is true because it represents an event he saw.

What are the critical questions for this version of the scheme for argument from appearance? Surely four of them are the following four questions previously identified as corresponding to factors in ADVOKATE.

PK2: How close was the witness to the event?

PK3: How favorable were the visibility conditions at the time?

PK4: Was the line of observation impeded?

PK5: Was the person observed known to the witness?

Thus what we see here is that these four questions do not correspond to the argumentation scheme for argument from witness testimony, but to the scheme for argument from appearance. Palmer (2003, p. 95) drew an evidence chart depicting the different kinds of evidence that can undercut an argument from witness testimony, redrawn in Figure 1.1.

Palmer sees the three additional facts shown on the right in Figure 1.1 as detracting from the evidential value of the argument from witness testimony used in the case of bank robbery discussed in his analysis. What is being proposed here is that they could be seen not as reasons against argument from witness testimony, at least directly, but as reasons against the argument from perception that is joined as a contributing argumentation scheme to the scheme for argument from testimony.

The other factor that Pollock identified was that of memory. Argument from witness testimony is indebted not only to an argument from appearance, but also to a scheme we could call argument from memory.

Argument from Memory

A witness *W* recalls an event *E* from memory as having happened.

Therefore *E* really happened.

Three of the critical questions we identified as deriving from ADVOKATE correspond to the argumentation scheme for argument from memory.

PK1: What is the length of time since the witness observed the event?

PK6: Were there reasons (other than PK5) for remembering what was observed?

PK7: How much time elapsed since the event?

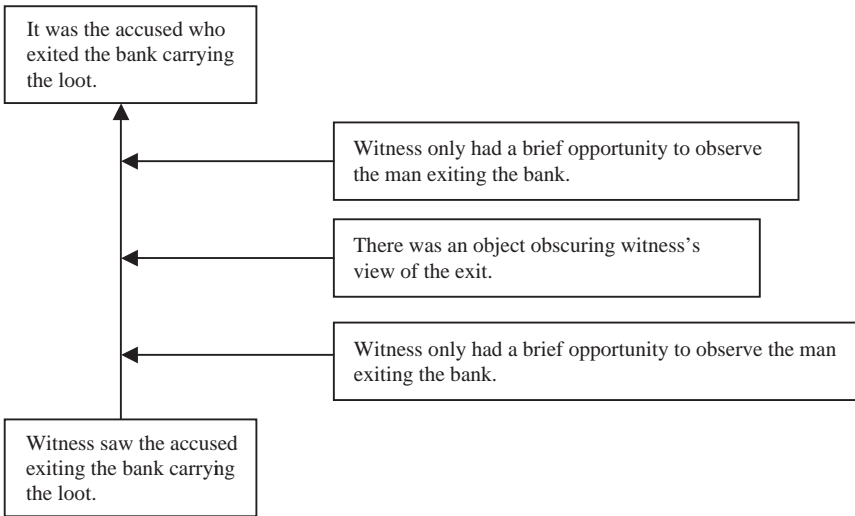


FIGURE 1.1. Palmer's diagram of evidence detracting from witness testimony.

All we have found here then is that the other factors identified by the ADVOKATE system and by Schum (1994) are very important in the analysis and evaluation of witness testimony evidence, but they do not directly correspond to the argumentation scheme for argument from witness testimony. Instead, they correspond to two other schemes on which this scheme is based, namely argument from appearance and argument from memory.

The structure of how the sequence of reasoning of the kind identified by Pollock fits together in the case of argument from witness testimony is shown in Figure 1.2.

The structure of reasoning is fundamentally important, because it shows how witness testimony is based on memory and perception through a sequence of inferences.¹⁴ It shows that in addition to the critical questions matching the scheme for argument from testimony, we also need to consider two additional sets of critical questions, one matching the scheme for argument from appearance (perception) and the other matching the scheme for argument from memory. We always need to see that argument from testimony has been bolstered by these two other separate but supportive argumentation schemes.

¹⁴ The structure showing how argument from witness testimony is based on an embedding of argument from appearance and argument from memory was first shown in an argument diagram presented as part of an initial draft of a paper by Reed and Walton (2006) that was deleted before publication.

10. The Argumentation Scheme and Critical Questions

When evaluating an appeal to witness testimony, because it is a position to know argument, the evaluator has no direct access to the evidence that the witness presumably possesses. This form of direct verification, by observation of the facts, is not possible. Hence the best the evaluator can do is to test the consistency of the account given by the witness, to see if the account hangs together and is consistent with other evidence that is known about the case independent of the testimony. Probing into the consistency of the witness's account is achieved by asking critical questions. Three critical questions that concern consistency are the following.

CQ1. Is what the witness said internally consistent?

CQ2. Is what the witness said consistent with the known facts of the case (based on evidence apart from what the witness testified to)?

CQ3. Is what the witness said consistent with what other witnesses have (independently) testified to?

All three kinds of critical questions have been discussed extensively in the legal literature on examination of witnesses, and many interesting cases could be considered here. There are many fine points to be clarified. What is most important here, however, is to see how sequences of dialogue in legal cases can involve complex argumentation in which such questions can, in turn, increase or decrease the probative weight of an appeal to witness argument as evidence.

A complex sequence of argumentation that can occur in a case of this sort has been studied by Wagenaar, van Koppen, and Crombag (1993, p. 38). If one witness has a reason for lying, additional evidence, in the form of testimony of another witness, could still support the claim of the first witness. Suppose that another witness testifies to the claim that Peter shot George. Then alongside the argument above, a second argument brought in by new evidence in the case is considered.

Argument 10

Initial Statement: It should be investigated whether Peter shot George.

Claim: Peter shot George.

Backing: Witness *WI* states that Peter shot George.

Generalization: Witnesses normally tell the truth.

Subconclusion: Witness *WI* is telling the truth.

This argument reinforces the (defeated) prior argument, argument 9, producing two independent lines of reasoning that undercut the prior argument supporting the claim that Peter shot George. The stronger argument supports the claim that is only weakly supported by the first one. The two latest arguments above form a complex network of argumentation that needs

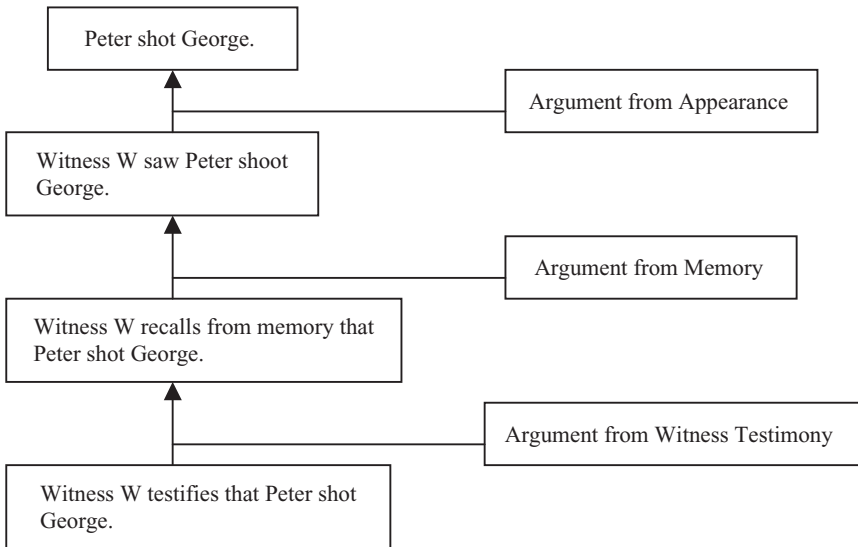


FIGURE 1.2. Embedding of argument from appearance and argument from memory.

to be seen as a mass of evidence relevant to the investigation. But is the first argument worthless, once the defeater comes in, or should it be seen as weakened but not entirely worthless. How should its probative weight be judged?

But now consider an even more problematic structure of argumentation. In argument 11, each witness has a reason for lying.

Argument 11

Initial Statement: It should be investigated whether Peter shot George.

Claim: Peter shot George.

Premise 1: Witness *W1* states that Peter shot George.

Generalization: Witnesses normally tell the truth.

Subconclusion: Witness *W1* is telling the truth.

Defeater: Witness *W1* has a reason for lying.

Premise 2: Witness *W2* states that Peter shot George.

Subconclusion: Witness *W2* is telling the truth.

Defeater: Witness *W2* has a reason for lying.

In this case, both subarguments from witness testimony have been defeated. So are both worthless, or should the fact that they agree on the claim make the total argument have some probative weight? How to evaluate this kind of argumentation as evidence in this kind of case is discussed by Wagenaar,

van Koppen, and Crombag (1993). Although each witness is unreliable, the fact their testimony agrees could be taken as supporting the claim that Peter shot George. The reasoning is based on the consistency of the two accounts. If the testimony of one witness agrees with the testimony of another, this agreement yields stronger support for the claim than the testimony of either witness would separately. As Whately (1863, p. 40) noted, the number of witnesses is a factor, and in some cases, the more witnesses that make the same claim, the stronger is the support for that claim. In other cases, however, more is not better.

Consider how the argumentation sequence might proceed in a case where there is more than one witness. Suppose it was found that the two witnesses were in collusion. This evidence would undercut the generalization that when two witnesses agree, the combined testimony is stronger. This sequence of argumentation could be represented as follows.

Argument 12

Initial Statement: It should be investigated whether Peter shot George.

Claim: Peter shot George.

Premise 1: Witness *W1* states that Peter shot George.

Generalization: Witnesses normally tell the truth.

Subconclusion: Witness *W1* is telling the truth.

Premise 2: Witness *W2* states that Peter shot George.

Generalization: Witnesses normally tell the truth.

Subconclusion: Witness *W2* is telling the truth.

Defeater: Witness *W1* is in collusion with witness *W2*.

The value of consistency between the two accounts as conferring probative weight now disappears. Each single argument from testimony is defeated, and the probative value of their agreement is also undercut. The sequence of argumentation as a whole fails to provide any probative weight to support the claim that Peter shot George.

The arguments considered above show that defeasible argumentation is expandable from an initial base. New defeaters of various kinds can come in at any point in the sequence of argumentation. As the argument keeps expanding, it is continually open to defeat and re-evaluation of its probative weight. Only once all the relevant evidence has been presented, and the investigation is closed, is evaluation of support for the claim fixed. The problem now confronted in the rest of the book is how to devise tools that can be used to analyze and evaluate this kind of argumentation.

One of the main tools that will be used in this book to analyze and evaluate witness testimony is the argumentation scheme for appeal to witness testimony. As noted in Section 4, appeal to witness testimony needs to be

treated as a defeasible form of argumentation and evaluated on a balance of considerations in relation to the evidence in a given case. Any given instance of an appeal to witness testimony in a trial can be attacked in two ways. One way is to present a rebuttal. The other is to present an undercutter. A rebuttal is a counterargument that has the opposite conclusion to that of the original argument. For example, consider the argument, “Peter shot George because witness Ed says he saw him do it.” This appeal to testimony could be attacked by presenting the following rebuttal: “Peter did not shoot George because witness Shawna says that Peter was at home at the time of the shooting.” The other way to attack an appeal to witness testimony is to ask a critical question of a kind appropriate for this type of argument. Three of these critical questions have already been presented in the [previous section](#). But there are two more to be considered.

Another critical question matching the argumentation scheme for appeal to witness testimony has to do with the bias of the witness.

CQ4. Is there some kind of bias that can be attributed to the account given by the witness?

If evidence can be found by questioning that shows that the account given by the witness is biased, that finding will detract from the probative weight of the appeal to witness testimony as an argument. There are many indicators of bias. One of the most important ones is the finding that witness has something to gain by testifying in a certain way. Another is the language used by the witness. For example, the language may have strong emotive connotations that are accusatory. Another indicator is the selectivity of the witness’s account. The account may stress details on one side, but overlook details that should be on the other side. If a witness is biased, it does not necessarily follow that the witness is lying. The bias could be unintentional.

Another critical question for appeal to witness testimony has to do with the plausibility of the claim made in the argument.

CQ5. How plausible is the statement *A* asserted by the witness?

This plausibility factor can react with the evaluation of the appeal to witness testimony in various ways. If the statement made by the witness is highly implausible, it can backfire on the credibility of the witness. However, in some cases, the implausibility of the statement made can actually be a basis for conjecturing that what the witness claimed is really true. For example, if two independent witnesses have made the same implausible claim, that could suggest that their observations are careful and accurate. Whately (1863, p. 44) cites the following case. An ancient historian “records a report of certain voyagers having sailed to distant country in which they found the shadows falling on the opposite side to that which they had been accustomed to.” They might record this account as incredible. But we, because we realize that the voyagers had gone to the southern hemisphere, have reason

to accept this account as plausible. As Whately put it (p. 44), we perceive that the historian could not have invented this account. What the ancient historian sees as implausible provides evidence to us, his modern readers, that what he wrote is plausible.

10.1. *Full Form of the Scheme and Critical Questions*

For convenience of use in discussing it and applying it in subsequent chapters, the argumentation scheme for appeal to witness testimony is now presented in full form, along with all five of the critical questions that correspond to it.

Argument from Witness Testimony

Position to Know Premise: Witness *W* is in a position to know whether *A* is true or not.

Truth-Telling Premise: Witness *W* is telling the truth (as *W* knows it).

Statement Premise: Witness *W* states that *A* is true (false).

Conclusion: Therefore (defeasibly) *A* is true (false).

Five Critical Questions Matching the Argument from Witness Testimony

Internal Consistency Question: Is what the witness said internally consistent?

Factual Consistency Question: Is what the witness said consistent with the known facts of the case (based on evidence apart from what the witness testified to)?

Consistency with Other Witnesses Question: Is what the witness said consistent with what other witnesses have (independently) testified to?

Trustworthiness Question: Is the witness personally reliable as a source?

Plausibility Question: How plausible is the statement *A* asserted by the witness? Exception if what the witness says is implausible.

The factors Schum and Morris (2007) cite under the heading of competence seem to relate to the position to know premise. The factors they cite under the heading of credibility seem to relate to the trustworthiness critical question. Note that these are not all the critical questions that may need to be considered, but they are the basic ones. Each basic one can have sub-questions. Here we add only one of these, an important subquestion of the trustworthiness question:

Bias Question: Is there some kind of bias that can be attributed to the account given by the witness?

This question relates to the factor that Schum and Morris call objectivity. One can see how the argumentation scheme, along with its set of critical questions, provides a tool for analyzing and evaluating particular cases of

witness testimony evidence. The argumentation scheme displays the premises used to support the claim made in the conclusion, thus marking out the type of evidence needed to give a reason to accept the conclusion. Premises that were not explicitly stated, but that are needed to support the argument, can be made explicit by applying the scheme to the case. Grounds for attacking the support relationship in any appeal to witness testimony are indicated by the critical questions. Normally the burden of proof is on the proponent of the argument to offer evidence to support it when she advances it in a case. But if the argument fits the requirements of the scheme and the premises are plausible, the burden shifts to the side of the respondent. If the respondent asks any one of the five basic critical questions above, the original argument defaults, until such time as the proponent answers the question. In any given case there will be a mass of evidence, and an appeal to witness testimony will be just one argument in many that are relevant. Although it can be a very strong argument in some cases, appeal to witness testimony is defeasible. The scheme and its set of matching critical questions is a model of logical form that expresses this property of defeasibility.

The argumentation scheme matching a particular type of argument, taken along with its set of matching critical questions, has proved to be a useful tool, both for studying conversational argumentation generally, and for solving some problems of legal argumentation (Verheij, 2005; Walton, 2005). It is perhaps, at this stage, however, only a rough tool that is useful for helping students to think critically. Building it into an automated system of argumentation that could be used to model legal reasoning requires a more sophisticated structure (Verheij, 2003). The basic problem is the critical questions. The premises and conclusion composing the argumentation scheme are statements or propositions, entities that are true or false. Inferences made up of premises that are propositions of this sort can fairly straightforwardly be modeled using tools of formal logic and artificial intelligence, tools such as argument diagramming. But questions are a different ball game. They are not so easy to model using the same tools. Another problem that came up continually throughout Chapter 1 was that the statements and the inferences made up from them need to be evaluated as plausible or implausible, using a nonmonotonic logic suitable for defeasible reasoning. The rest of the book will take up this problem of how to integrate the critical questions with the argumentation scheme for argument from witness testimony to build a clear and precise model of this kind of argumentation in a way that could be useful for artificial intelligence.

Plausible Reasoning in Legal Argumentation

A plausibilistic argument is one that yields a conclusion that is an assumption that seems to be true, on the basis of the evidence at some point in a proceeding, but may be subject to retraction if new information comes into the case at a later point in the proceeding. The conclusion is drawn tentatively, and is subject to retraction if, as a story continues to unfold, new evidence comes in showing that it is not (likely) true. Plausibility has often been mistrusted, to some extent justifiably, because it is not only subject to defeat in some cases, but in other cases, it can be misleading, and even be the basis of fallacies, of the kind long studied in logic (Walton, 1995). And yet it is becoming more and more evident through recent work in AI that the majority of arguments we are familiar with, both in legal argumentation and in everyday conversational argumentation, are based on plausible reasoning of a kind that is weaker than deductive or inductive reasoning. It is often thought to be based on abductive inference, or inference to the best explanation. MacCrimmon (2001, p. 1455) cited the evidentiary rule that a person found in possession of a recently stolen item is the thief. On an abductive model, the inference is reasonable if the person's having stolen the item is the best explanation of how he came to possess it. Of course, such a conclusion is only a presumption that is defeasible in light of other evidence.

According to the analysis of plausible reasoning proposed in this chapter, probative weight of an argument is analyzed in terms of acceptance. The theory is not based on truth, or knowledge of a kind that implies truth, but on rational acceptance, or what is called commitment in the literature on argumentation theory. According to the theory, a statement is said to be plausible as evidence based on three criteria. The first criterion is that it should be based on given appearances presented as data. However, these given data could turn out to be false or misleading as new evidence is produced. Plausible arguments are defeasible. They are only tentatively acceptable as commitments, and they may need to be retracted as new evidence comes in.

The second criterion is that the statement can be accepted as more plausible if it is tested, and the test confirms its acceptability. The third criterion is whether it fits in with other data that are acceptable independently as evidence. This theory of evidence has its roots in the American school of pragmatism, especially the version of Charles S. Peirce. But its roots go even deeper to the Greek philosopher Carneades (213–128 BC). This chapter will show that the study of plausible reasoning (often misleadingly called ‘probability’) has a long history, going back to the Greek sophists, through Plato and Aristotle, Locke and Bentham. From there its influence can be traced into the theory of legal evidence of Wigmore, through which it has a strong influence on the modern Federal Rules of Evidence. Sections 1 and 2 show the reader how to identify this kind of reasoning and present some historical background on its recognition as a distinctive type of reasoning, with some examples. Sections 3 to 6 present some especially illustrative cases of evidence based on witness testimony, analyzed and visualized using an automated system of argument diagramming. Sections 7 to ?? take up the perennial problem of how to evaluate the probative weight of this kind of reasoning, and propose a general method. Section ?? provides a summary of the method.

1. Chaining of Plausible Reasoning in Evidence

Wilson (1960) has shown how any legal case at trial can be broken down into a logical structure containing a nested set of propositions that form a sequence of reasoning, representing the evidence on one side in a trial. This structure contains two main elements. First, there is the main claim or proposition to be proved or cast into doubt. In law this proposition is called the ultimate *probandum*. The general method of proving this proposition in law is to prove another set of propositions closely related to it in a given case. Wilson (1960, p. 101) called these other propositions the “ingredients”. He offered the following example (p. 101), in which a defendant was charged with an offense of speeding in a restricted area where the speed limit was 30 mph. Let us call it speeding case 1. According to Wilson’s analysis, the speeding charge in case 1 can be reduced to the following three propositions that he calls its ingredients.

- (P1) At time T, X drove car C from X to Y.
- (P2) At time T car C went from X to Y at a speed exceeding 30 mph.
- (P3) X to Y is in a restricted area.

On Wilson’s analysis, each of these ingredients must be proved before the defendant can be convicted, and he therefore calls them *facta probanda*. They are the facts to be proved in order for the ultimate *probandum* to be proved.

The more general logical problem posed by Wilson's analysis is how the ingredients are related to the ultimate *probandum*. The question is how these three propositions can be combined together and then joined by means of a logical inference to derive the proposition that is the ultimate *probandum* as a conclusion. Wilson (1960, pp. 101–2) accepted the hypothesis that such an inference is deductively valid, writing that once the separate ingredients are established it is impossible to argue that the ultimate *probandum* is not true. Thus he concluded that the inference is a matter of logical necessity, and not one of merely probable inference (p. 101). Another case cited by Wilson (p. 105) seems to support this hypothesis. In speeding case 2, one constable spoke to the time of entry to the speed trap, another spoke to the time of exit, and a third spoke to the distance between the exit and entry points. A bench of five judges held that only one witness was required for each of the three facts and that this evidence should be enough to warrant a conviction (*Scott v. Jamieson*, 1914 2 S.L.T. 186). Wilson argued that the court was mistaken, however, in describing the evidence in the case as a chain of circumstantial evidence (p. 105). On his analysis, the three facts should be seen as ingredients of the charge, and once they have been established, the inference to the conclusion is a necessary one (p. 105). Whatever else one might say about this interesting case, it seems right, as Wilson argued, that the inference from the three ingredients as premises to the conclusion that the defendant exceeded the speed limit should be classified as a deductively valid argument. If so, it is fair to conclude that this type of case supports the hypothesis that the logical inference from the ingredients to the ultimate *probandum* is deductive in nature.

Still, it may be that in other cases, the inference is not deductive. Let us reconsider speeding case 1. Propositions P1, P2, and P3 are linked together to derive the ultimate *probandum* through the use of a generalization. In this case, the generalization is the proposition G: any driver who drives a car through a restricted area where the speed limit is 30 mph at a speed exceeding 30 mph is guilty of the offense of speeding in a restricted area. Stating this generalization and showing how it links together the ingredients to enable the ultimate *probandum* to be derived as a conclusion partly solves the problem. But there still remains the problem of knowing what kind of logical inference it is. There are two theories, depending on how G is classified as a type of generalization. One theory is that the inference is deductive, meaning that it is logically impossible for the premises to be true and the conclusion false. The other is that the inference is defeasible, meaning that it is not deductively valid, and moreover that it is subject to defeat in exceptional circumstances. It can be put forward as a hypothesis that the inference to the ultimate *probandum* is not deductive in nature, but falls under the category of defeasible reasoning. A reason for accepting this hypothesis is based on the assumption that G is a defeasible generalization rather than an absolute (universal) one. If G is subject to

exceptions, the inference to the ultimate *probandum* from P1, P2, and P3, taken together with G, should not be regarded as one that holds of necessity. On this hypothesis, the inference from the ingredients to the ultimate *probandum* is one that holds tentatively, subject to defeat if the case turns out to be an exceptional one. It is a plausible inference, and it carries evidential weight to the *probandum* if the premises are true, but it is not deductively valid.

1.1. Wigmore's Theory of Evidence

The greatest and most convincing champion of the importance of plausible reasoning in law was John H. Wigmore, although he did not explicitly call it by that name. He built his theory of evidence around a kind of inference that can be used to shift probative weight to a conclusion from premises. According to Wigmore's analysis, in a given case, the total body of evidence on either side of a legal case can be represented as a network of connected inferences. Each single link or step in the network represents a local inference in which the premises shift a probative weight, generally a small probative weight in relation to the total evidence in the case, toward the conclusion. The conclusion then acts as a premise in another inference leading to yet another conclusion. So the body of evidence as a whole can be pictured, according to Wigmore, as a series of connected inferences all leading toward the ultimate conclusion at issue in a case. In a criminal case, for example, the ultimate conclusion on one side is that the defendant is guilty as charged, while the ultimate conclusion on the other side is opposed to this proposition. The other side has to show that the first side has not produced sufficient evidence to show that the defendant is guilty. According to Wigmore's theory, each single inference in a body of evidence carries some probative weight, but counterargumentation can show that it carries less weight than it was originally thought to.

Wigmore assumed that there are only two types of inference, deductive and inductive, and he described inferences that carry probative weight in law as inductive. Twining wrote (1985, p. 179) that this restricted view was a weakness of his approach stemming from his reliance on views of influential writers on logic held at the time. Even so, Wigmore employed the language of inference to the best explanation when discussing many cases. Two examples from Wigmore's *Principles* (1931, p. 20) illustrate this point.

Last week the witness *A* had a quarrel with the defendant *B*; therefore *A* is probably biased against *B*.

A was found with a bloody knife in *B*'s house; therefore *A* is probably the murder of *B*.

These inferences are classic examples of defeasible plausible reasoning. In the first one, the fact of the quarrel is cited as a reason to infer that the witness is biased. But a biased witness may be telling the truth. The existence of

the quarrel is therefore not conclusive as an argument to rebut the appeal to witness testimony. Yet if used in cross-examination, the argument would cast doubt on the probative worth of the appeal to witness testimony as a plausible argument. Similarly, the factual finding of *A* in possession of the bloody knife in *B*'s house is evidence of guilt. But further evidence could bring out some other plausible explanation of such facts. Hence Wigmore used the qualifier “probably”, which he would have taken to mean that the argument is inductive. Yet to anyone familiar with presumptive argumentation schemes and plausible reasoning, the argument clearly needs to be put in a third category. Once this third category is recognized, Wigmore’s theory of evidence begins to show its enormous potential.

Wigmore’s theory works very well in dealing with many kinds of evidence that have been shown to be weaker than originally thought. The underlying philosophical view is that evidence can carry a probative weight and be real (legitimate) evidence, even though it may at some future point in a case be subject to defeat. It could be good evidence now, even though it may turn out not to be good evidence, or to be weaker than was originally thought, in the given case. For example, eyewitness testimony was shown by Loftus (1979) to be erroneous in many more cases than previously thought, even though it is commonly used as legal evidence and has carried considerable weight in many cases. In general, as shown in Chapter 1, appeal to witness testimony should be seen as a defeasible form of argumentation. Expert opinion testimony is another kind of evidence that has an important place in trials, but has sometimes proved to be weak, wrong, or misleading. Many cases of “battles of the experts” show, in fact, that expert opinion testimony can be marshaled on both sides of a disputed opinion, so that one expert can be right only if the other is wrong. Another kind of case that has been prominent is the use of DNA evidence to show wrongful conviction. The strength of Wigmore’s theory is that it treats legal evidence as based on plausible reasoning of a kind that can carry weight in many cases, even though it is subject to defeat in some cases.

According to Wigmore (1940, p. 401), there is a mass of evidence on both sides of a case in a trial, and the evidence on either side can be viewed as a network of single inferences chained together. Each single inference has some probative weight. For example, one inference may be a conclusion about the actions of the defendant, drawn from the testimony of a witness. Another inference may consist of a conclusion drawn from a piece of circumstantial evidence, for example, some fingerprints at the scene of the crime. The conclusions of these two inferences may act as premises in a third inference that enables the conclusion to be drawn that the defendant was present at the scene of the crime. This conclusion might, in turn, function as a premise in further inferences leading to the conclusion that the defendant committed the act at issue. Wigmore (1913 (second edition, 1931), pp. 46–78) presented his method of evidence chart analysis, which

takes the form of what would now be called a directed graph, showing all the pieces of evidence in a case and how they are used to draw conclusions in a sequence of inferences. Wigmore was also very well aware that these inferences are plausibilistic in nature. He cited the case (1940, p. 420) of a man who came into possession of a large sum of money after a robbery. This fact is offered to indicate that he got the money from a robbery. As Wigmore put it, there could be several other explanations offered to explain this fact – he could have received a legacy, or made some winnings in a gambling game. The conclusion drawn is on a basis of “inference to the best explanation”, which is a plausible form of inference. Wigmore’s theory of evidence is based on plausible inference, and on an argument diagramming technique of summing up the evidence in a case, sometimes called the Wigmore chart method. This method was the first well-developed method of argument diagramming, a tool now widely used in argumentation and artificial intelligence.¹

2. Legal and Historical Background of Plausible Reasoning

As shown by Twining (1985), Wigmore’s theory of evidence is based on Bentham’s theory of probability so-called, which could better be described as a theory of plausibility. According to Bentham’s theory, there are two parts to establishing the plausibility of a proposition, as shown, for example, by cases of witness testimony. One is the plausibility of the proposition itself, which might be indicated by the confidence of the witness. The other is the subsequent process of examining the testimony (Twining, 1985, p. 28). Other factors mentioned by Bentham are the internal consistency of the testimony, and the usual or unusual nature of the event itself. For example, if a witness claimed that damage to a garden was caused by a falling balloon, the unusual nature of this event would tend to detract from its plausibility (Twining, 1985, p. 54). A question asked by Bentham (p. 64) was whether the plausibility of an inference can be measured by a number or numerical ratio. Although Bentham doubted that such numbers could be assigned in a way consistent with the mathematical theory of probability, he did think that comparatively, one might say that one proposition is highly plausible, while another is only slightly plausible (p. 64). One of the central ideas in Bentham’s theory of evidence is the chain of reasoning, defined (p. 65) as a sequence of propositions linked together by single inferences. Each proposition has a probative weight, or degree of probability, and this weight is transferred forward through the links in the chain. The links are probable inferences. Bentham even expressed the idea that as the chain gets longer,

¹ The Wigmore chart method was revised, more fully developed, and applied to legal cases by Anderson and Twining (1991), and in the revised second edition (Anderson, Schum, and Twining, 2005).

its ultimate probative force is weakened (p. 64). Without going into detail, it is interesting to see that Bentham did have the idea of a chain of plausible inference forming the evidence in a case, and he did raise questions about how to evaluate this kind of reasoning, based on the notion of probable (plausible) inference. Wigmore's theory of evidence is built around these same fundamental notions.

The genesis of the notion of plausible inference so fundamental to Wigmore's theory of evidence can be traced to Bentham (Twining, 1985), but does the root of the idea go even farther back? The answer is that it very definitely does. The idea is expressed quite fully in Locke's *Essay Concerning Human Understanding*, in Book 4, Chapter 15. Locke's example (p. 276) is the story of the Dutch ambassador who told the king of Siam that the water in Holland would sometimes freeze so hard that people could walk on it. The king, because of his lack of experience of cold conditions, found the story implausible. At any rate, it is clear that Locke was familiar with plausible reasoning, and even analyzed it in a systematic way. But the roots of plausible reasoning go back still further. As Jonsen and Toulmin (1988) showed, the medieval tradition of casuistry deriving from Cicero's method of weighing "probable reasons" on both sides of a legal or ethical case, had plausibility ('probability', it was called) as its central tool of reasoning. The casuists would weigh up the probable arguments on both sides of a case, and then decide which opinion, in the case of a conflict of opinions, was the more probable. So although the concept of plausible reasoning has not been in the mainstream of logic, it has a history of use, both in ethics and in philosophy of law, that went, via Bentham, into Wigmore's theory of evidence. It is shown below that it had ancient roots even older than the time of Cicero, and in fact had a place of some prominence in the ancient world.

Plausible reasoning is often based on common understanding of the ways things normally work, or may be generally expected to go, in kinds of situations that are familiar to everyone. This concept of drawing conclusions from the way things can normally be expected to go in familiar situations was known in ancient dialectic and rhetoric as an important basis for logical inferences. It was especially important for the sophists, but it was also well known to leading philosophers like Plato and Aristotle, who based their views of dialectical argumentation on plausible reasoning.

2.1. *The Eikotic Argument*

One of the basic reasoning tools used by the sophists was the so-called argument from *eikos*, from plausibility, from what 'seems likely'. Traditionally, the term *eikos* has been translated into English (via Latin) as 'probability'. But in view of the modern meaning given to the term 'probability' after Pascal, and in modern statistics, using this word to stand for plausibility in the sense of *eikos* is misleading. Plausible (eikotic) reasoning is based on a person's subjective understanding of how something can normally be expected to

go in a familiar situation, based on a reasoner's ability to put herself into a situation that is familiar to both the speaker and hearer of an argument. Plausibilistic reasoning of this kind is very common, but it is quite different from reasoning on the basis of probabilities of the kind modeled in the probability calculus. Of course, it could represent some kind of so-called subjective probability. But however it is to be analyzed, it does have a subjective aspect, as the following famous example from the ancient world will show.

The classic illustration of plausible reasoning is a matched pair of arguments called the eikotic argument and the reverse eikotic argument. It was well known in the ancient world, and can be found in Plato, but its origin was attributed to two sophists, Corax and Tisias, who lived around the middle of the fifth century BC (Gagarin, 1994, p. 50). The eikotic argument was described by Aristotle in the *Rhetoric* (1402a17–1402a28), where it was attributed to Corax.

The Eikotic Argument

In a trial concerning a fight reported to have taken place between two men, one man was visibly bigger and stronger than the other. They are described as the weak man and the strong man. The weak man, appealing to the jury, asks them whether it appears likely to them he, the smaller and weaker man, would have assaulted a much bigger and stronger man. Such a hypothesis would not appear to be plausible, assuming the smaller man is a reasonable person who knew what he was doing, because the likely outcome would be his getting beaten up. And the jury would presumably know that the smaller man would know it. Putting themselves into the position of the smaller man in the given situation, they would know that it would be unlikely they would attack the larger man, unless they were pretty desperate, and perhaps even not then. They conclude that it is possible that the smaller man attacked the larger, but that it is improbable that this is what happened, in the absence of any other hard evidence about what happened.

The eikotic argument turns on a balance of considerations. In a legal case of the kind imagined, it could be one man's word against the other's, if no other evidence is available which would prove that the one or the other story is true. In such a case, the issue of which man attacked the other could be suspended on a balance. A small weight of plausible evidence on one side or the other could tilt the balance of the whole case one way or the other. In the eikotic argument presented above, the weight of plausibility yielded by the given argument would weigh against the proposition that the smaller man attacked the larger. But the eikotic argument does not appear, in any obvious way, to be based on inference to the best explanation. The conclusion drawn is that it is unlikely that the smaller man attacked the larger. But it would not appear that this conclusion is the inference to the best explanation from some given fact. If this interpretation is correct, then it would appear that there are other cases of plausible reasoning that are not

abductive, or at least are not based on inference to the best explanation in any obvious way, like the cases cited by Peirce.

The most interesting, even delightful feature of Aristotle's account is that he shows it is possible to have a reverse eikotic argument, opposed to the original eikotic argument.

The Reverse Eikotic Argument

The stronger man asks the jury whether it is plausible that he, an obviously much stronger and larger man, would assault the visibly smaller and weaker man. His reasoning runs as follows: he knows how criminally responsible such an act would make him look if the case ever came to court. He knows he would be likely to be blamed. But he also knows that the jury knows that he would know that. Given this knowledge, is it plausible that he would attack the weaker man? The answer is 'no'. The conclusion drawn is that it is implausible, other things being equal, that the larger man attacked the smaller.

The reverse eikotic argument draws as its conclusion the negation of the proposition drawn as conclusion by the original eikotic argument. The reverse eikotic argument, if used, would tilt the balance of considerations to the opposite side of the eikotic argument. So here we have a clever illustration of how you can have a plausible argument for a particular proposition, and also a plausible argument for the negation of that proposition. One plausible argument is used to attack a previous plausible argument. This opposition of the two sides appears to be based on abductive reasoning. One side offers an explanation of the given facts, then the other side offers an alternative explanation. According to Gagarin (1994, p. 51), the reverse eikotic argument was a typical 'turning-of-the-tables' argument favored by the sophists of the second half of the fifth century BC.

The eikotic argument and the reverse eikotic argument show, among other things, that judgments of implausibility can be very important in common cases of plausible reasoning. In the eikotic argument, it was shown that the hypothesis that the weaker man attacked the stronger, in the given case, appears implausible. It is not logically impossible, or even statistically improbable, but it is implausible in the sense that it violates our expectations of the way we would expect things to normally go, in the absence of some explanation of why such an unlikely event might happen. So the eikotic argument puts a probative weight on the side of the smaller man. But then, as the reverse eikotic argument so cleverly shows, there can also be an eikotic argument on the side of the stronger man, that puts some probative weight on his side of the case. Neither eikotic argument is conclusive, by itself. Each gives only a small amount of probative weight for its conclusion. And the one conclusion is the opposite of the other. So we see how plausible arguments work in a given case. They occur where there is an underlying conflict of opinions, and a plausible argument gives some probative weight that can be placed on the one side or the other. Plausible arguments are not

conclusive, by themselves. They are small probative considerations that are part of a larger evidential picture. Individually, each of them may be weak. But a lot of them, taken together as part of a body of evidence in a case, can tilt a burden of proof to one side or the other, where there is a conflict of opinions.

2.2. *Carneades' Example of the Snake and Rope*

The skeptical philosopher Carneades, who was head of the third Platonic Academy, even worked out a set of criteria for judgments of "probability" (plausibility). As recorded in *Against The Logicians* (AL 174–84), a summary of many ancient views recorded by Sextus Empiricus, Carneades was reported to have given three criteria of plausibility. An impression is true if (1) it seems true, (2) it fits in with other impressions, and (3) it is confirmed by testing. Sextus relates the classic skeptical example of the rope (AL 188), which Carneades used to illustrate his theory. A man sees a coil of rope in a dimly lit room, and assuming it to plausibly be a snake, he jumps over it. But turning back afterward and seeing it does not move, he inclines toward the view that it might not be a snake. At this point then, he accepts the proposition that the object is plausibly a rope, on the grounds that even though it initially looked like snake, its failure to move indicates that it is probably a rope. But then, reasoning that snakes are sometime motionless, he carries out the test of prodding it with a stick. It still does not move. This test would indicate that it is plausibly a rope, and not a snake. The inference drawn in such a case, to stay away from the apparent snake, on the basis of what seems plausibly to be the case, is a typical case of plausible reasoning. The assumption could be wrong, but until further information comes into the case, as a working assumption it is best to presume (on a basis of safety) that it has some degree of plausibility, perhaps enough to indicate a prudent course of action. But then further appearances lead to revising the initial plausible assumption. Finally, testing out the assumption supports the newly revised assumption that is now accepted. The example of plausible reasoning used by Carneades is readily applicable to evidence in a typical legal case at trial, where there are two opposed sides and each side has a hypothesis to explain the facts.

It can be seen from the above doctrines that plausible inference was well known as a common and important type of reasoning in the ancient world. But logic after Aristotle took deductive reasoning as its main concern, and plausible reasoning has been paid little or no attention to, throughout the history of logic. It survived in ethics under the casuists, but when Pascal successfully attacked and discredited casuistry, plausible or 'probable' reasoning also died out, as a subject for teaching or further investigation. Through Bentham, it survived into Wigmore's theory of evidence, but as a subject for serious scientific or philosophical investigation in its own right, or as a topic for research in logic, it pretty well disappeared, or remained

under the surface. But it is not hard to see its importance when examining the kind of argumentation used in a modern trial.

2.3. *Plausible Reasoning in a Trial*

It is most interesting that Pennington and Hastie (1991, p. 524) use an example to illustrate their theory of juror decision making that is very similar to the classic case of plausible reasoning in the eikotic argument above. In what they call the “Johnson case”, the conclusion ‘Johnson was afraid’ is deduced from the premises that Caldwell was big and Caldwell was known to be a troublemaker. The reason that the jurors can infer this conclusion from these premises in the case considered by Pennington and Hastie is that the jury can compare the reasoning to their own experiences. So it is not hard to see how plausible reasoning is really the basis of the theory of jury decision making put forward by Pennington and Hastie. The importance of plausible reasoning in legal argumentation has been made evident by the use of it by Pennington and Hastie.

In a typical case at trial, each side collects a mass of evidence, of a kind represented by a Wigmore evidence chart, that leads to its ultimate *probandum* in the case. Thus it looks like the conflict of opinion in the case is directed only at the ultimate *probandum*. But actually this is not so. Often, in a case, one claim made in evidence is specifically refuted by evidence brought forward by the other side. In other cases, an argument brought forward as evidence by one side is brought into doubt by critical questions about it posed by the other side. These two latter kinds of cases could be classified as local evidential clashes, meaning that a claim is made in evidence by one side and is opposed by either an attempted refutation or by the asking of critical questions by the other side. An important distinction needs to be drawn in these latter two kinds of cases.

Asking a critical question is different from making a rebuttal (refutation), and both of these are different from making an objection. A rebuttal is an argument that attacks the conclusion of a prior argument made by the other side in a dialogue. Asking a question is not really putting forward an argument. But asking a critical question can have a function similar to a counterargument. This is because asking a critical question can defeat a premise used in an argument, or attack the inferential link between the premises and the conclusion. In common language, making an objection could refer to any kind of counterargument. But in law, making an objection is basically putting forward an argument to the effect that some prior move of the other party in dialogue has violated the rules of the dialogue. Thus, in the legal sense, making an objection in a trial setting is claiming that some rule of dialogue was violated. For example, according to Park et al. (1998, p. 71), “Objections to the form of question or answer are rules about the conduct of the trial, rather than about the validity of the various kinds of evidence”. A ‘leading’ question, or a question that is ‘argumentative’, may be objected to during the examination of a witness in a trial. Other

kinds of objections are on the basis of relevance or hearsay. Relevance and hearsay are defined in procedural rules like the Federal Rules of Evidence. Objections, when made in court, often cite a specific evidence rule that has allegedly been violated.

It was not until quite recently, with the advent of artificial intelligence (AI), and its concern with reasoning under uncertainty, default reasoning, and so forth, that plausible inference finally came to be thought of as a significant and respectable subject for logical investigation. There is now a growing literature on what can be said about the structure of plausible of reasoning, using tools from AI, that would help our understanding and evaluation of legal evidence, and legal reasoning generally. One tool of analysis that is extremely useful as a place to begin is the technique of argument diagramming.

3. Diagramming Witness Testimony as Evidence

Arguments are chained together in what is called (Walton, 1996, pp. 187–8) a *reasoning structure*, $R = (P, I, F)$, which consists of (1) a finite nonempty set P of propositions, p_1, p_2, \dots, p_n ; (2) a finite set I of inference steps, i_1, i_2, \dots, i_m ; and (3) a function $F: I \rightarrow P \times P$ that maps each step into an ordered pair (p_i, p_j) of propositions. A *line of reasoning* (p. 189) is an alternating sequence of propositions and steps in a reasoning structure, $p_0, i_1, p_1, \dots, i_m, p_n$, where each step i_i goes from p_{i-1} to p_i . A line of reasoning used in a case can be represented as an *argument diagram*, a directed graph in which the points (nodes) represent propositions and the arcs (arrows) represent inferences from selected propositions to other selected propositions. An example is given in Figure 2.1 subsequently. Not only are such argument diagrams familiar in argumentation theory (Freeman, 1991), but also diagrams of very much the same kind were used in Wigmore's theory of evidence. How the reasoning steps, in the form of single inferences based on warrants, are connected up in a chain of reasoning in a legal case of argumentation has also been well illustrated by Farley and Freeman (1996). Their analysis identified the different types of inferences that are commonly used and showed how to evaluate the various kinds of steps as weak or strong. The device of the argument tree, used by Lodder (1998, p. 37) to track a sequence of argumentation in a legal dialogue, is a particular type of argument diagram, and is a species of directed graph. Tree structures are also used by Pollock (1995) and Prakken (2001a, p. 122; 2001b, p. 198) to model sequences of argumentation. Lodder showed, using some legal case studies (1998, pp. 63–73), how well the directed graph structure is applicable to cases of legal argumentation. So-called dialectical graphs have also been widely used by Gordon (1995) to model legal pleading. An automated system for constructing argument diagrams will be introduced in Chapter 7, and how to use it to analyze cases of witness testimony evidence will be explained.

Wigmore's theory of evidence is built on an idea of the chaining of inferences to make up the argumentation on one side of a case that can be put together as a body of evidence. In Wigmore's theory, there is a mass of evidence in any given case made up of a sequence of inferences chained together into a structure that can be represented in a diagram that looks very much like a directed graph. Wigmore (1940, p. 401) used such diagrams to show how a collection of single inferences in a case can be combined into a diagram displaying the interconnections of each of the single steps of inference to the others. The final point or node in the diagram represents the ultimate proposition to be proved by the evidence presented in a case. Steps (arrows) in the diagram represent the different kinds inference from different kinds of premises, such as 'testimonial assertions' and 'circumstances'.

The diagram reveals how such single inferences are chained together, in those instances where the conclusion of one inference becomes the premise in the next inference, producing a new conclusion. In addition to these chains of arguments, or so-called serial arguments, there are four other kinds of arguments making up such a structure – single arguments, linked arguments, convergent arguments, and divergent arguments. Single arguments have only one premise and one conclusion. Divergent arguments have only one premise, but have more than one conclusion drawn from that premise. In the distinction between linked and convergent arguments, there can be several premises involved, that is, more than two. But to make the exposition as easy to follow as possible, we will take the simplest kind of case, in which the argument has only two premises and one conclusion. In a *linked argument*, both premises are required in order to support the conclusion. In other words, the two premises function together in supporting the conclusion. In a *convergent argument*, each premise represents an independent line of support for the conclusion.

3.1. *The Assault Example*

To give a brief illustration of how the argument diagramming technique should be used in a case of witness testimony used as evidence in a trial, constructing an argument diagram of a simple example using *Araucaria* is helpful. In the following case, an individual D is prosecuted for assault. Thus on the prosecution side, the ultimate *probandum* is the statement that D committed the assault. The outline of the case is quoted from Wigmore (1935).

The Assault Example (Wigmore, 1935, p. 179)

Prosecution of D for assault. The assailant had fled after the assault, which took place on a crowded street corner at night near a street lamp. D denies being the assailant. Three persons, present at the street corner, testified to identify him. But M, one of them, admits that he was talking with a friend and did not see the assailant until he had started to run. Another, N, admits that he was engaged in paying off a cab, and

that he had the street lamp full in his face when he turned to look at the assailant, with the light shining at the assailant's back.

The argumentation in this example is based on three instances of appeal to witness testimony. Two of the witnesses are called M and N, so let us call the third witness L. The statements in the assault example are presented in the following key list.

Key List for the Assault Example

- (A) D committed the assault.
- (B) Witness L testified that he saw the assault and identified D as the assailant.
- (C) Witness M testified that he saw the assault and identified D as the assailant.
- (D) M was not in a position to know.
- (E) M was talking with a friend at the time of the assault.
- (F) M did not see the assailant until he started to run.
- (G) Witness N testified that he saw the assault and identified D as the assailant.
- (H) N was not in a position to know.
- (I) N had the street lamp full in his face when he turned to look at the assailant.
- (J) The light was shining at the assailant's back.

An argument diagram of the assault case can be composed on the computer screen using software that has been developed for this purpose. *Araucaria* is an automated system of argument diagramming using an Argumentation Markup Language (Reed and Rowe, 2002). It is available as freeware on the Internet.² You can insert the text of a given argument as a text file into *Araucaria* and then use the system to draw in lines representing inferences from premises to conclusions. Once the text has been inserted, the user can highlight each proposition that is a premise or conclusion in the argument. Each will then appear in the box on the right. Next the user can draw lines (arrows) indicating which premise or premises support which conclusion. The result is the argument diagram in the box on the right in Figure 2.1. As the argumentation is represented on the diagram, A is the ultimate conclusion or *probandum* in the case. Each of the other statements is a premise or conclusion in a chain of argumentation leading to A. E and F are separate reasons supporting conclusion D. They form a convergent argument supporting D. I and J are separate reasons supporting H. They form another convergent argument supporting H. As indicated by the double arrow joining D and C, D is a reason against C. Similarly, the double arrow between

² The *Araucaria* software can be downloaded from the following location on the Internet. www.computing.dundee.ac.uk/staff/creed/araucaria/

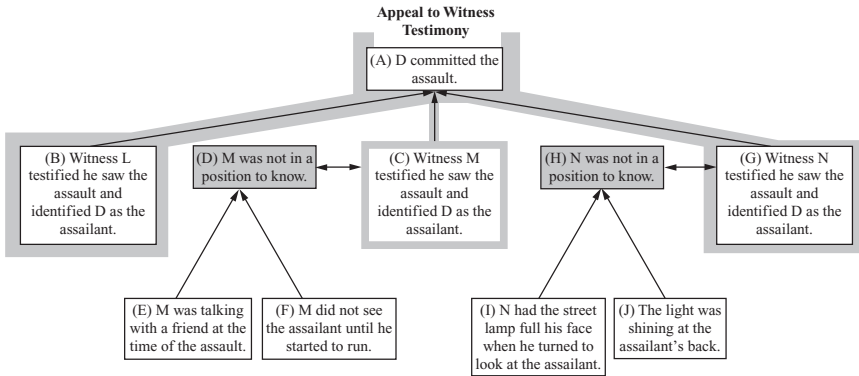


FIGURE 2.1. Araucaria diagram of the assault example.

H and G indicates that H is a reason against G. The double arrow represents a refutation. Refutation represents the notion of opposition, or negation.

One of the most useful features of *Araucaria* is the way it uses a set of argumentation schemes based on the classification in Walton (1996) and allows argumentation schemes to be inserted into a repository. This function enables the user to display the type of argument linking a set of premises to a conclusion. One of the schemes that can be added is appeal to witness testimony. The shading of the arrows with names at the top of Figure 2.1 represents argumentation schemes. For example, B supports A based on the argumentation scheme for appeal to witness testimony. C supports A based on the same scheme. And G supports A based on the same scheme. In Figure 2.1, statements D and H appear in shaded boxes, showing that each represents a refutation. Also exhibited in the diagram are three instances of the argumentation scheme called appeal to witness testimony in Chapter 1. B is the premise of one argument based on appeal to witness testimony leading to A. C is another. And G is still another. In other words, the diagram shows that there are three instances of appeal to witness testimony in the argumentation as a whole.

A problem comes in when we consider a part of the diagram on the right in Figure 2.1. In this part of the diagram, two separate reasons are given to support the proposition that witness N was not in a position to know, the proposition that he had the street lamp in his face and the proposition that the light was shining at the assailant's back. Could this part of the argument be diagrammed in a different way? These two propositions do not really refute the proposition that the witness was in a position to know. Rather they function as critical questions which cast doubt on whether the witness was in a position to know. The problem is, however, that we cannot represent critical questions on the argument diagram. The best we can do, it seems,

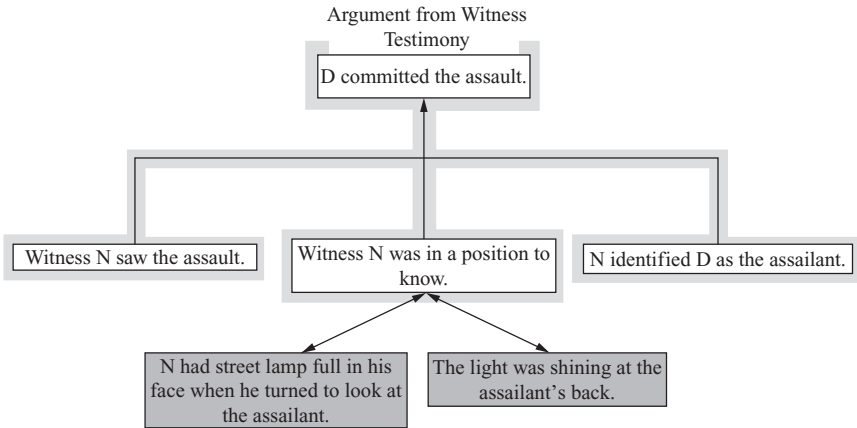


FIGURE 2.2. Problem in representing critical questions in the assault case.

is to represent the argumentation in the form shown in Figure 2.1. This limitation can be shown in Figure 2.2.

The critical questions matching each argumentation scheme are shown in the representation of each scheme in the scheme file in *Araucaria*. But still, we seem to have a problem in representing how the two propositions shown at the bottom in Figure 2.2 act as critical questions of the kind discussed in Chapter 1 that throw doubt on the worth of the perception of the witness as evidence. These two propositions do not really refute the proposition that the witness was in a position to know. Nor do they refute or bring into question the proposition that the witness saw the assault. How they really function is to question factors concerning the accuracy of the witness's perceptions. They really act like critical questions somehow connected to the argument from appearance on which the argument from witness testimony is based. We leave the representation of these critical questions as an open problem concerning the diagrammatic representation of witness testimony evidence.

3.2. The Arson Example

Next, another simple example can be used to show more about how arguments from witness testimony are represented and evaluated in *Araucaria*. The example below is quoted from Wigmore (1935). It represents a sketch of a simple kind of case that recurs very often in legal argumentation in trials.

The Arson Example (Wigmore 1935, p. 178).

Action by P against D for money due on a fire insurance policy; plea, fraudulent arson of his own premises. D calls as witness E, a former employee of B, who testifies to P's expressions of intention to burn the shop, to get the money to pay off a mortgage

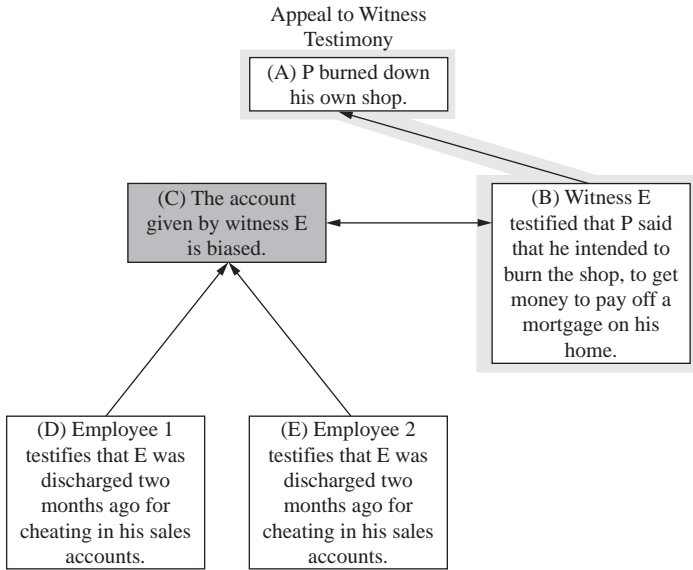


FIGURE 2.3. Araucaria diagram of the arson case.

on his home. B, to discredit E's bias, calls other employees to testify that he was discharged two months ago, for repeated cheating in his sales accounts.

This case is one of alleged bias of a witness. Bias was one of the critical questions matching the appeal to witness testimony argumentation scheme in Chapter 1. It is an important factor in evaluating appeals to witness testimony. To see how *Araucaria* frames this factor, we begin with the set of premises and conclusions in the case.

Key List for the Arson Example

- (A) P burned down his own shop.
- (B) Witness E testified that P said that he intended to burn the shop, to get money to pay off a mortgage on his home.
- (C) The account given by witness E is biased.
- (D) Employee 1 testifies that E was discharged two months ago for cheating in his sales accounts.
- (E) Employee 2 testifies that E was discharged two months ago for cheating in his sales accounts.

The argument diagram for this case is shown in Figure 2.3. It is shown in Figure 2.3 that D and E are each separate reasons for C. Thus they form a convergent argument supporting C. Each premise represents a distinct reason independent of the other. C is a refutation of B. And finally, B

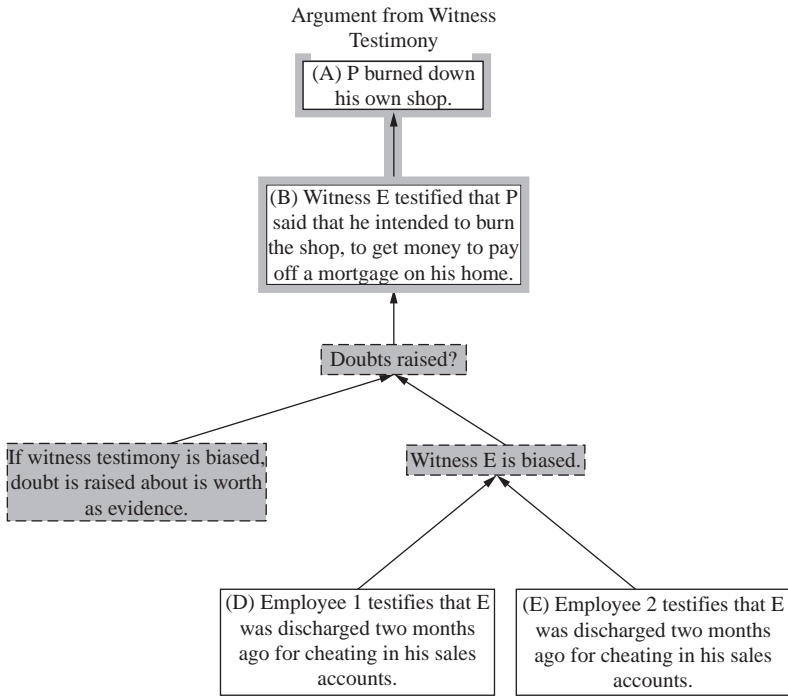


FIGURE 2.4. Another way of representing the evidence in the assault case.

supports A, the ultimate conclusion, using the appeal to witness testimony as the argumentation scheme.

The problem raised by the arson example is how to deal with critical questions and refutations. In Figure 2.3 the bias allegation is represented as a refutation. However, in Chapter 1, such a bias allegation would be dealt with as a critical question matching the argumentation scheme for appeal to witness testimony.

A different way of representing the evidence in the arson case is shown in Figure 2.4. In this other way of representing the evidence, shown in Figure 2.4, three implicit premises have been inserted, shown in the dashed boxes. But once again the problem arises that we can only show affirmative propositions in this box and arrow type of diagram. We can't properly show questions in the way indicated in Figure 2.4, an improper argument diagram so far as the technology has been developed to this point.

Which way is better remains an open question at this point. For the present, *Araucaria* diagrams a defeater of this sort as a refutation. When *Araucaria* develops a systematic way of representing critical questions matching a scheme, a better way of distinguishing between rebuttals (refutations)

and critical questions (which mainly tend to functions as undercutters that are weaker than rebuttals) may be offered. For the moment, the problem of dealing with different modes of opposition has not been entirely solved.

4. Linked and Convergent Arguments

The assault example is a good illustration of a case where a decision has to be made on whether to diagram a text as a linked or convergent argument. In a convergent argument, each premise functions as evidence on its own supporting the conclusion. In the assault case, one premise supporting the conclusion that M was not in a position to know was the statement that M was talking with a friend at the time of the assault. Another premise supporting the same conclusion (D) was the statement that M did not see the assailant until he started to run. Are these separate reasons, each of which stands on its own as an argument supporting D? Or should they be grouped together as premises in a linked argument supporting D? In this case, it is not too easy to tell. The two premises taken together both relate to M's decreased ability to get a good view of what the assailant was doing or what he looked like at the time of the assault. This could suggest that the argument is linked. On the other hand, each statement really presents a separate reason to cast doubt on the statement that M was in a position to know. One reason is that he was busy talking to a friend. The other is that M did not see the assailant until he started to run. If one reason was eliminated, the other would still stand on its own. Hence in the diagram above, the argument is represented as convergent. Much the same remarks apply to the two premises I and J represented as convergent arguments supporting H.

There is no calculative test that can be used, in abstraction from the context of a given case, to test decisively whether a given argument is linked or convergent. The indicator words and the context of use of the argument need to be taken into account. But in conjunction with these factors, one kind of test is sometimes very helpful (Walton, 1996). In a linked argument, if you remove the one premise from consideration, the plausibility value of the support for the conclusion will go down considerably (though not to any fixed numerical degree). In a convergent argument, in contrast, if you remove the one premise from consideration, the plausibility value of the support for the conclusion will not tend to go down very much, or may not even go down at all. The basic rationale of the linked-convergent distinction, as explained in Walton (1992, p. 40) is pragmatic. In a linked argument, if a critic successfully questions or refutes one premise, the whole argument falls down. In a convergent argument, a critic needs to attack both premises to refute the argument. For even if the one premise is questioned or refuted, the other premise can still function as an independent line of support for the conclusion. Thus in the discussion of the assault case in the previous paragraph, it was concluded that E and F should be drawn as a convergent

argument supporting D. The reason was that each can stand as reason on its own, even if the other were deleted as a premise.

One of the best pieces of evidence that is useful to help classify a given argument as linked or convergent is the argumentation scheme. This criterion can be based on deductive argument forms as well as presumptive argumentation schemes. A good illustration of a linked argument is a deductively valid argument of the *modus ponens* form. Let's consider a case where defendant Bob has been accused of blowing up a building and thereby causing harm of some sort. An important part of the case would be evidence that he bought explosives. The following inference might be part of the chain of argumentation in the trial.

Inference 1

If Bob bought the explosives, Bob blew up the building.
 Bob bought the explosives.
 Therefore Bob blew up the building.

In the case of inference 1, the two premises together deductively imply the conclusion. Hence if the two premises are taken to be plausible in a given case, together they would provide quite a heavy weight of support for the conclusion. But if you take either premise away, the remaining premise by itself does not give a very heavy weight of support for the conclusion. This inference is therefore clearly a linked argument. With many valid forms of argument, like syllogisms for example, it is quite clear that the argument is linked.

Argumentation schemes are also very helpful as part of the evidence for determining whether an argument is linked or convergent. For example consider a typical piece of testimonial evidence in a trial.

Inference 2

A witness Sheila says she saw Bob buy explosives.
 Sheila was in a position to know.
 Therefore Bob bought explosives.

This argument is clearly linked, because the two premises function together to support the conclusion. If either were to be cancelled or cast into doubt, the other by itself would not provide much evidence at all to support the conclusion.

But now by way of contrast consider a typical convergent argument.

Inference 3

A witness Sheila said she saw Bob buying the explosives.
 The bill indicated that someone with handwriting similar to Bob's bought the explosives.
 Therefore, Bob bought the explosives.

In inference 3, each premise provides some weight of evidential support for the conclusion. Neither is conclusive. Both taken together give more support than either one individually. But if one premise is deleted, the other still gives a considerable weight of support for the conclusion. If one is deleted, the weight of support for the conclusion drops. But it does not drop as radically as would occur in the previous two inferences. This test apart, however, we can also see that inference 1 is linked, because we know from the structure of the argument (*modus ponens*) that the two premises function together to support the conclusion. Similarly, in the case of inference 2, the argumentation scheme for appeal to witness testimony connects the two premises together as a unit. In the case of inference 3, we are aware that eyewitness evidence and handwriting evidence are two separate kinds of evidence that can be evaluated separately and brought in separately as arguments used to support the conclusion. So it is not hard to appreciate why the argument is convergent in this case.

Now let's come back to the problem posed in Chapter 1, Section 6. How could witness testimony corroboration be defined in relation to arguments fitting this scheme? For example, suppose witness 1 says that a proposition is true and witness 2 independently also says that the same proposition is true. The normal rule would be to say this is a convergent argument, and that the plausibility of the conclusion should be taken as equal to that of the stronger of the two arguments. But this is not really corroboration, as the one argument from witness testimony is not having an effect on the other. Each is independent of the other. But there is another way the secondary argument could be seen as corroborating the initial one by increasing its plausibility value. Schum (1994, p. 154) classified this kind of case under the heading of ancillary evidence, where one item of evidence can be strengthened or weakened by another. For example (p. 154), evidence of a witness's observational sensitivity can be related to the conditions of evaluation of witness testimony as ancillary evidence that can strengthen or weaken it. On this approach, one argument can increase or reduce the plausibility value of one or more of the premises of another one. For example, a second argument from witness testimony could be seen as supporting the truth-telling premise of the first one. This approach of treating corroboration of witness testimony as ancillary evidence is the one we will adopt in diagramming witness testimony as evidence.

5. Convergence, Corroboration, and Credibility Corroboration

Redmayne (2000, p. 151) asks us to consider a case of what he calls convergence. Convergence is defined as follows (p. 150): two pieces of evidence are convergent if "they point in the same broad direction, for instance, toward guilt". The example of convergence he offers is the following: "C reports a recovered memory of abuse by D, and there is medical evidence to support

her allegation". In this type of case he concludes, "The medical evidence does not increase the probative value of the memory". Redmayne's analysis of the logic of this kind of case is interesting.

Redmayne (2000, p. 150) has drawn an important distinction among three kinds of evidence structures that are fundamental to legal argumentation. This three-way classification can be summed up (in my own terms) as follows.

1. *Corroboration*: one witness says something and then a second witness says the same thing. Example: there is witness testimony of some claim, such as recovered memory of abuse, and then the suspect confesses that he committed the abuse.
2. *Convergence*: Two pieces of evidence are convergent if they point in the same direction, that is, toward the same conclusion. Example: medical evidence and testimony made by a witness each point toward the conclusion that the suspect committed the crime.
3. *Credibility Corroboration*: One piece of evidence supports the credibility of another that is based on witness testimony. Example: one witness testifies that another witness has a reputation for being truthful.

Let us go back and compare three basic kinds of type of witness testimony as evidence considered in Chapter 1. An example of each is given. The first, although often called corroboration, as we saw, may less confusingly be called convergence of evidence.

Testimonial Evidence Type 1

- (A) Witness *W* says he saw Peter shoot George.
- (B) The bullet that was found in George's body was fired from Peter's gun.
- (C) Peter shot George.

The second type of evidence involves the independent testimony of two witnesses, each of whom testifies to the same proposition.

Testimonial Evidence Type 2

- (A) Witness *W* says he saw Peter shoot George.
- (B) Witness *X* says he saw Peter shoot George.
- (C) Peter shot George.

The third type of evidence corresponds to the kind of evidence structure Redmayne (2000, p. 150) called credibility corroboration.

Testimonial Evidence Type 3

- (A) Witness *W* says he saw Peter shoot George.
- (B) Witness *X* says that witness *W* has a reputation for being truthful.
- (C) Peter shot George.

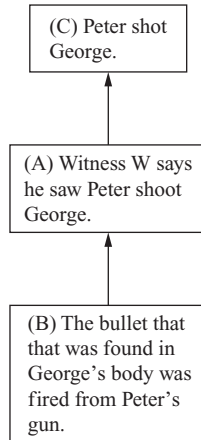


FIGURE 2.5. Type 1 evidence as corroboration.

The problem is now how to analyze the logical structure of each of these three kinds of evidence by seeing how each works as an argument. We need to see how the premises support the conclusion based on an argument structure. There is also a problem about terminology and how to label and classify each type of evidence structure. As noted previously, all three are classified under the heading of corroboration in the current terminology (although that terminology may not be altogether consistent or clear).

5.1. Examples of Evidence as Corroboration and Convergence

First let us diagram type 1 evidence as corroboration. In the diagram representing this interpretation, Figure 2.5, the proposition *B* is shown as corroborating the weaker proposition *A*. In this diagram, the arrow from *B* to *A* represents the first argument. Since *B* is strong evidence, it boosts up the evidential value of *A* by corroborating it. The structure displayed in this diagram is that of a serial argument. It is a chain of argumentation in which one argument supports another. However, as previously indicated, type 1 evidence may be better classified as convergence rather than corroboration.

An argument diagram representing the structure of type 1 evidence by classifying it as convergence is shown in Figure 2.6. According to the structure represented in Figure 2.6, *A* is one premise in a single-premise argument that supports conclusion *C*, and *B* is another premise in another argument. Each argument independently supports *C*. This representation classifies the argument as convergent, and also fits it into the category Redmayne calls convergence of evidence. However, this diagram may not be the only way to analyze such an argument, as previously discussed. Thus there are two distinct interpretations of the argument structure of testimonial evidence of type 1.

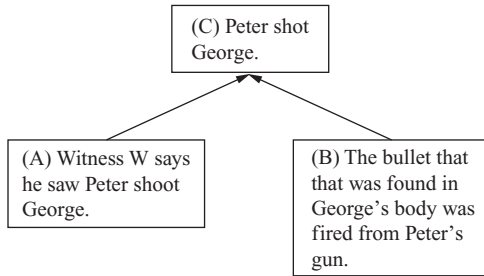


FIGURE 2.6. Type 1 evidence as convergence.

The evidential structure of corroborative evidence is not as simple, however, as Figure 2.6 indicates. To make clearer what is happening in such an instance we need to diagram the probative weight of the evidence of each premise, and how the argument shifts this probative weight onto the conclusion. This can be shown in Figure 2.7. In Figure 2.7, each proposition is shown as having an initial probative weight. Let's say, as might happen in a typical case, *B* is relatively strong as evidence while *A* is comparatively weak. Ballistics evidence tends to be comparatively strong, while witness testimony might be subject to many more doubts and critical questions. And let's say that conclusion *C* hangs on a balance in the trial, and therefore at the mid-point of trial where this evidence is just being introduced, any probative weight counting for or against *C* is quite small or even nonexistent. So let's label *A* as weak, *B* as strong, and *C* as undetermined.

Using Figure 2.7 as our interpretation of an initial state of type 1 evidence, we can now represent the final evidence state in Figure 2.8. In

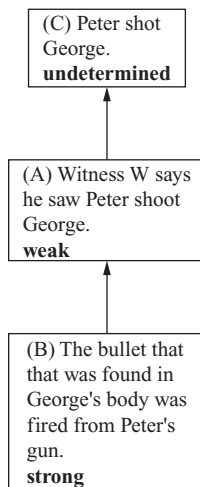


FIGURE 2.7. Initial plausibility values.

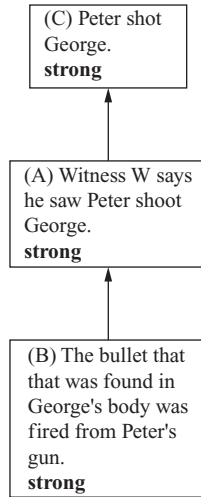


FIGURE 2.8. Final plausibility values.

Figure 2.8, because the plausibility value of *B* is strong, it has boosted up the plausibility of *A* to a strong value. Now *B* in turn, once it is plausible as a premise, or at any rate more plausible than it was as shown in Figure 2.7, boosts up the plausibility of *C*.³ This evidential structure represents corroboration, but of a quite different kind than represented in Figure 2.5.

5.2. Credibility Corroboration Evidence

Now we turn to Redmayne's third type of evidence he called credibility corroboration, using the argument labeled above as testimonial evidence type 3 as our example. In this case, *A* is a premise in an argument from witness testimony, and *B* is a premise in an independent argument from witness testimony supporting the first one. This case can therefore be classified as one of nested argumentation from witness testimony. *A* represents a premise in an argument from witness testimony, and *B* is supporting one of the premises of that argument. In a case like that represented in Figure 2.9, the increase in probative weight supplied for the conclusion if the premises are plausible would work as follows. By supplying evidence for the truth telling premise, *B* would boost up the probative value of the argument from witness testimony, an argument also based partly on premise *A*. Thus it would be incorrect to explain this shift by saying that the plausibility of proposition *B* boosts up the plausibility of proposition *A*. A better analysis is to say that *A* is part of

³ Figures 2.7 and 2.8 represent the plausibility evaluation in an oversimplified manner, in order not to overwhelm the reader with complexities. We have only taken the plausibility values of the propositions (nodes) into account, and not represented the plausibility values of the inferences (arrows). The calculation taking the latter into account is similar, but involves more factors.

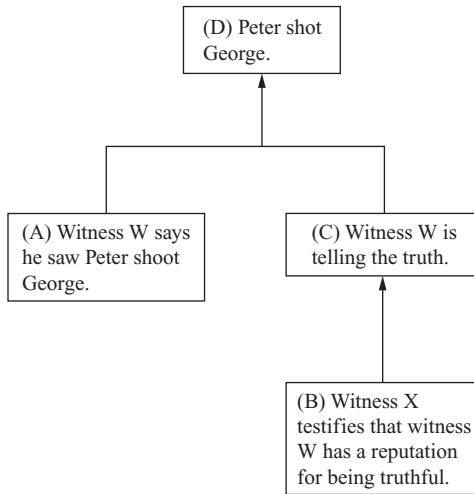


FIGURE 2.9. Credibility corroboration.

an argument from witness testimony, and *B* is reinforcing or strengthening that argument by positively supporting one of its premises.

The argument structure of testimonial evidence of type 3 is complex. It involves the relationship between an argument of a type fitting an argumentation scheme and the use of an additional argument of the same type to support one premise of that original argument. This structure can be represented more fully using the argumentation scheme for argument from witness testimony introduced in Chapter 1.

Argument from Witness Testimony

Position to Know Premise: Witness *W* is in a position to know whether *A* is true or not.

Truth-Telling Premise: Witness *W* is telling the truth (as *W* knows it).

Statement Premise: Witness *W* states that *A* is true (false).

Warrant: If witness *W* is in a position to know whether *A* is true or not, and *W* is telling the truth (as *W* knows it), and *W* states that *A* is true (false), then *A* is true (false).

Conclusion: Therefore (defeasibly) *A* is true (false).

But how should we analyze the logical structure of evidence of type 3 more deeply? To do it, we use *Araucaria* to construct an argument diagram that displays the use of the scheme. We begin with a key list of all the propositions in the argument.

(A) Witness *W* says he saw Peter shoot George.

(B) Witness *W* is in a position to know whether Peter shot George or not.

- (C) Witness *W* is telling the truth.
- (D) Witness *X* is in a position to know whether witness *W* has a reputation for being truthful.
- (E) Witness *X* testifies that witness *W* has a reputation for being truthful.
- (F) Witness *X* is telling the truth.
- (G) Peter shot George.

The warrant premise does not always need to be explicitly stated, and we will not display it on the diagram. Argument from witness testimony is sometimes also called appeal to witness testimony, and that is the name displayed in Figure 2.10.

Figure 2.10 gives a much more accurate picture of how argumentation in cases with evidence structure of type 3 ought to be analyzed and evaluated. It shows that there are two linked arguments connected to each other, and shows how each argument is based on the scheme for appeal to witness testimony. It also shows the implicit premises in each argument. In evaluating argumentation of this type, the weakest link principle should be applied. First, note that the argument from premises *A*, *B*, and *C* to conclusion *G* is linked. Thus the way to evaluate it is to boost up the plausibility value of *G* to the value of the least plausible of these three premises. But suppose, for example, that each of *A* and *B* is strong, but *C* is weak. In this situation, the plausibility value of *C* could be boosted by the other linked argument going from *D*, *E*, and *F* to *C*. If *D*, *E*, and *F* are each highly plausible, the argument from these three premises to *C*, since it fits the scheme for appeal to witness testimony, would be strong, and would increase the plausibility of *C*. This being so, the formerly weak argument from *A*, *B*, and *C* to *G* would become strong.

Thus the problem of how to evaluate credibility corroboration arguments has been solved. Thinking of credibility corroboration in the simplistic way we started out with, as just being one proposition corroborating another, can be replaced with this new and more sophisticated analysis. The new analysis reveals the deeper argument structure of corroboration as a kind of evidence. It shows how plausibility rules for evaluating such arguments should properly be applied to individual cases, depending on the evidence structure of the case.

6. Diagrams, Plausible Generalizations, and Enthymemes

An important feature of some argument diagramming systems is that they can be used to show how the argumentation in typical cases in evidence law rests on the use of generalizations that are plausible and defeasible in nature. Sometimes they fit in as premises (as Toulmin warrants) of known argumentation schemes. Sometimes they do not, for example in the kinds of cases of abductive reasoning so often cited by Wigmore in his analyses

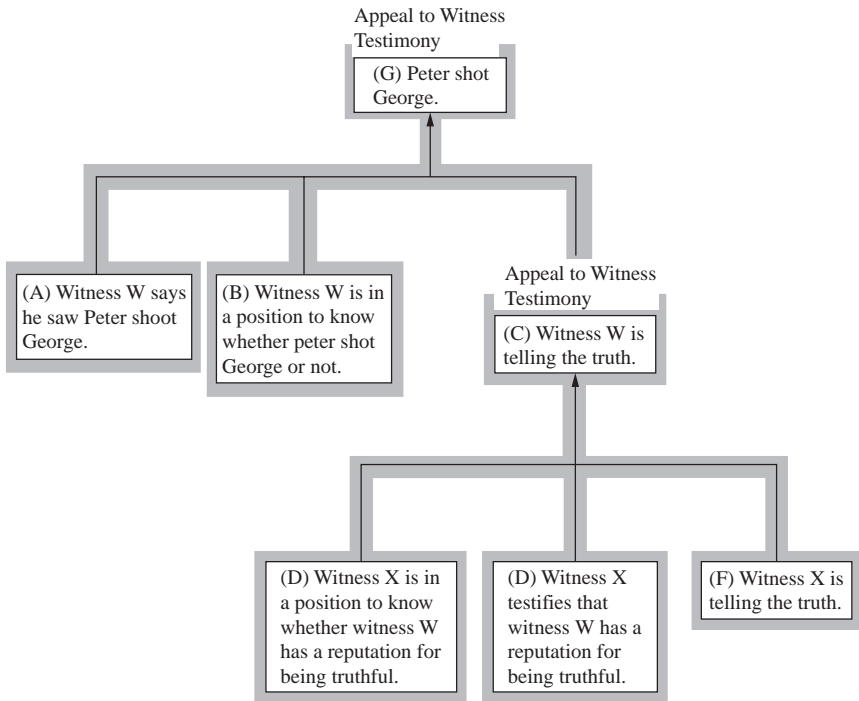


FIGURE 2.10. Credibility corroboration with schemes shown.

of evidence.⁴ Here is an example of such an inference presented in Section 2 of Chapter 2.

A was found with a bloody knife in B's house; therefore A is probably the murder of B.

This example points up the problem of generalizations in legal argumentation so well articulated by Anderson and Twining, as shown in Chapter 1, Section 3. The bloody knife case represents a long and fairly complex chain of plausible reasoning. The key inference is a case of argument from sign, which can be seen as a species of abductive reasoning. The finding of the bloody knife in the house of the accused party is a fact that can be explained by the hypothesis that it may have been used as the murder weapon. This

⁴ It has been shown how part of the evidence in the case of *Commonwealth v. Umilian*, an illustration used by Wigmore (1931, pp. 62–6) to explain his chart method, can be drawn as an argument diagram using *Araucaria* (Prakken, Reed and Walton, 2003). This diagram is quite nice to show how the argumentation scheme for appeal to witness testimony can be applied over and over in a single case, resulting in an argument diagram picturing a mass of evidence in a trial. It shows how both the arguments supporting, questioning and rebutting an appeal to witness testimony can be mapped within a sequence of argumentation displaying the evidence in a case.

hypothesis or best explanation can then be tested by forensic means. But even before such new evidence comes in, the linkage between the finding of the bloody knife and the charge of murder can be viewed as a chain of argumentation based on plausibilistic generalizations and conditionals. In typical cases of circumstantial evidence of this kind, especially in cases of forensic evidence, the argumentation can only be revealed by probing into a network of implicit assumptions that function as unstated premises. The underlying chain of argumentation, once the unstated parts are made explicit, can be represented as an argument diagram. Analyzing a comparable example using *Araucaria* will show, in broad outline, how evidence in such a case needs to be worked out. The case treated below combines witness testimony with circumstantial evidence.

6.1. *Analysis of a Homicide Case*

To show how *Araucaria* handles plausibilistic generalizations and enthymemes, let's consider a homicide case in which there are two items of evidence. One bit of evidence is testimonial. Another bit of evidence is circumstantial. In this case, Dave was charged with a homicide. It has been established that the homicide took place in a house that has been identified, and the approximate time of death is known. There are two key items of evidence. One is that a witness Wilma testified that she saw Dave leaving the house through the back window, around the time of the homicide. Another is that some traces of paint were found on Dave's pants. An expert on matching paint samples, Erik, testified that the paint found on Dave's pants matched the type of paint on the newly painted back window ledge of the house.

Key List of Explicit Statements in the Paint Example

- (A) Some traces of paint were found on Dave's pants.
- (B) Erik testified that paint traces found on Dave's pants matched the type of paint on the newly painted back window ledge of the house.
- (C) Erik is an expert on matching paint samples.
- (D) Witness Wilma testified that she saw Dave leaving the house through the back window around the time of the homicide.
- (E) Dave committed the homicide.

Implicit Premises in the Homicide Case

- (F) Witness Wilma was in a position to know about Dave's leaving the house through the back window around the time of the homicide.
- (G) Dave left the house through the back window around the time of the homicide.

The ultimate conclusion to be proved by the prosecution in the case is the statement that Dave committed the homicide. The problem is then one of determining how the other statements that form the evidence are used to support the conclusion by a chaining of argumentation.

The paint found on Dave's pants links him with the crime. The reasoning behind the link is not stated explicitly. However, we all grasp the connection because we are familiar with how these things normally work. This is often called common sense knowledge. The common sense knowledge that is the basis of the link in this case can be expressed explicitly in the following generalization.

When Dave left the house through a window it is plausible that he might have brushed his legs against the window frame, and that this action might leave paint traces from the newly painted window frame on his pants.

Thus suppose Dave, the suspect, was found to have traces of this matching white paint on his pants. The best explanation that would suggest itself is that the paint got there from his exit from the crime scene. This conclusion, in turn, leads by inference to another conclusion, that Dave left the house through the back window around the time of the homicide. Note that both these conclusions could be false. Thus the chain of reasoning based on them, leading to the ultimate *probandum*, is not conclusive. There could be other explanations of how Dave got the paint traces on his pants. He could have been working on the window frame as part of a home repair job at some other time. But in the absence of some other explanation of this sort, it is a plausible presumption that his exit from the crime scene explains the presence of the paint. And even if Dave did get the paint on his pants by exiting from the crime scene, it does not necessarily follow that he committed the homicide. He could have entered the room after the homicide had been committed, and then, for whatever reason, left through the window. Thus the argumentation is defeasible. It is a plausible chain of argumentation leading to the ultimate conclusion that Dave committed the homicide. Such a chain of evidence provides some evidence to support that conclusion, but by itself, it is not conclusive evidence.

There is other evidence in the case as well. Expert *E* testified that the paint traces found on Dave's pants matches the paint on the newly painted window ledge of the house. The argumentation scheme for appeal to expert opinion can be used to show how this other argument provides further evidence.

In the diagram in Figure 2.11, *E* is shown as the ultimate *probandum*. *G* is an implicit premise that supports *E*, and that all the other statements in the diagram support. There are two linked arguments that support *G*. *D* and *F* are premises in an appeal to witness opinion. Another aspect of this case that the reader will be curious about is the feature that *F* and *G* have been added as implicit premises. They were not explicitly stated as premises in the original argument, but it is clear that they are premises that need to be added in as assumptions to show the structure of the argument more clearly. This feature represents the problem of enthymemes, or arguments with unstated premises or conclusions.

To add a missing premise in *Araucaria*, you click on an icon on the toolbar. You are then presented with a dialogue box, and you must type the text

associated with the premise in the box. A new node will then automatically be inserted into the diagram, and you can connect it to the rest of the diagram in the usual way. It should be noted that *Araucaria* does not find the missing premises by itself. You, the argument analyst, must find it, but once you have, you can insert it into the diagram, and *Araucaria* will mark it as an implicit premise. However, *Araucaria* is often very useful to help with finding missing premises or conclusions in a chain of argumentation. For, as shown by the examples above, the argumentation scheme often shows, by applying to one premise, what other missing premise is required to fit the scheme and complete the argument. In many cases, however, a missing premise or conclusion is only indicated contextually – for example by Gricean implicature that depends on a context of dialogue. As will be explained in Chapter 3, Section 8, enthymemes can be based on needed or used assumptions. The used assumptions represent what are supposedly the commitments of the proponent who put the argument forward in the given case. Hence the analysis of enthymemes rests partly on plausible reasoning and the structure indicated by the argument diagram, but also partly on the context of the case.

7. Evaluating Plausible Reasoning

What kinds of standards are appropriate for evaluating plausible reasoning? Is there some objective set of rules, criteria, or guidelines for evaluating a plausible inference as strong or weak in a given case? In recent years, this question has finally begun to be asked, both in philosophy and in computer science – especially in AI studies (Prakken, 1997). Some calculi have been proposed, although there has been no substantial basis for agreement on which set of proposed rules is best for all contexts.

Different ways of assigning confidence values to propositions in plausible reasoning have been attempted in AI studies. According to Josephson and Josephson (1994, p. 266) a seven-step scale of plausibility values indicating greater or lesser plausibility worked very well in rating confidence values in medical diagnostic systems. Using numerical values in this way might suggest that plausible reasoning could be formalized by assigning numbers to outcomes in the manner of the mathematical theory of probability. But according to the experimental findings summed up by Josephson and Josephson (1994, p. 268) this way of evaluating plausible reasoning in medical diagnosis didn't work out very well. They concluded (p. 269) that there was no "significant computational payoff" in this approach, and (p. 270) that there is "a need to go beyond probability", in order to find some structure useful to model plausible reasoning. To make "smart machines" that can reason plausibilistically, they concluded (p. 270), some method of judging plausibility values different from the probability calculus is required. A body of literature that has been called 'new evidence scholarship' arose originally as a reaction against the proposal to evaluate

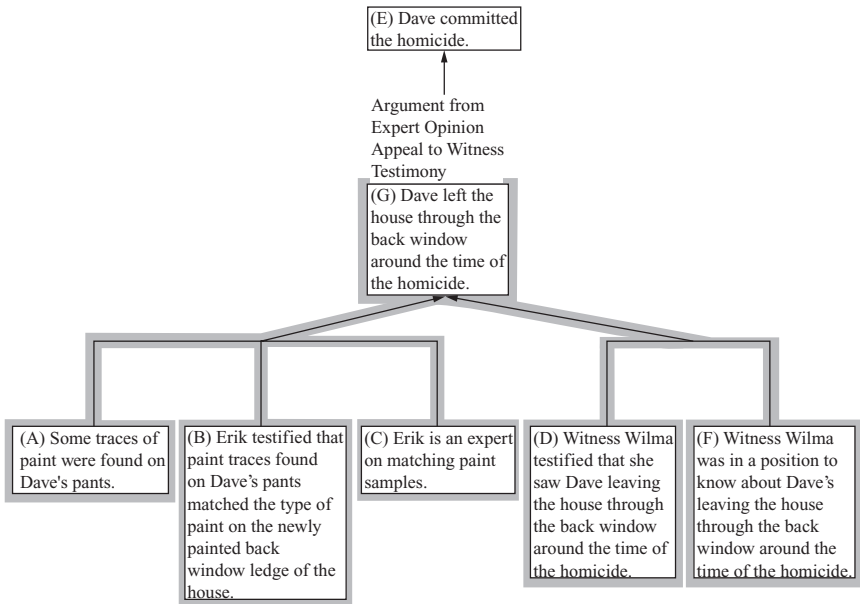


FIGURE 2.11. Argument diagram of the paint example.

the strength of legal evidence using Bayesian probability values, and the idea of assigning numerical values to legal claims or inferences is highly controversial among evidence scholars.⁵ Although most in the current AI and law community are skeptical about attaching numbers like probability values to nodes or inference arrows in argument diagrams, it is also generally conceded that some sort of rating of premises, conclusions, and arguments by comparative values such as ‘strong’ or ‘weak’ can be useful in assessing the worth of evidence.

7.1. Rescher’s System

Rescher (1976) has proposed not only a set of rules for plausible reasoning, but also a philosophical analysis of plausibility that is interesting in its own right. The hypotheses put forward by Rescher on the subject are the natural place to start any investigation. The key formal difference between plausibility and probability has been well explained by Rescher (1976, pp. 28–39). The probability calculus is based on the negation rule:

$$(NR) \text{ Prob} (\neg A) = 1 - \text{Prob} \quad (A)$$

⁵ These controversial matters were discussed in two well-known special issues of journals, *Decision and Inference in Litigation*, *Cardozo Law Review*, 13 (1991), and *Probability and Inference in the Law of Evidence*, *Boston University Law Review* 66, 1986. Twining (1990, Chapter 4) has given a summary of the controversy.

For example, if you throw a fair six-sided die, suppose you want to calculate the probability of not having a 3 turn up. The probability of getting a 3 is one in six. You calculate one minus one-sixth, which gives you five-sixths. As a corollary of this rule, it follows that if the probability of a proposition is high (low), the probability of its negation is low (high). But this rule is not characteristic of negation in plausible reasoning, according to Rescher. Among the formal rules of plausible reasoning stated by Rescher (1976, p. 15) is the Inconsistency Stipulation Rule:

(*IS Rule*): Nothing is to prevent the prospect of its happening that both A and $\neg A$ should be relatively highly plausible (e.g. at 9).

Here then is the most fundamental difference between plausibility and probability. Probability follows the negation rule (*NR*), whereas plausibility does not. The *IS Rule* could be said to be highly characteristic of plausibility. In legal argumentation in a trial, for example, it is normal to have plausible argumentation on both sides of a case, even though the claim of the one side is the very opposite of the claim of the other side. Or in a case of witness testimony, for example, one witness could say that the robber was short while another witness claims that the robber appeared tall to her.

What is the explanation given by Rescher to account for this key difference? Rescher's explanation is that plausibility should be defined as the "reliability or trustworthiness" of a source that vouches for or reports the truth of a proposition. And, of course, it is not only quite conceivable, but presumably quite common, that a proposition can be vouched for as true by one source (even a credible source) while its negation is vouched for by another source (who may also be generally credible). For example, in a trial, one expert may testify that in her opinion the defendant was sane at the time of the crime while another expert may testify that in his opinion the defendant was insane at that time. Rescher's explanation is that both claims can be plausible, because each claim should be seen as an assumption based on the reliability of the source that vouches for the claim. This explanation goes only part of the way, however. For plausibility of a proposition is not always or only based on the reliability or trustworthiness of the source who vouched for that proposition. Sometimes plausibility is based on what appears to be true to an observer, who sees a situation himself directly, and draws certain conclusions from what he sees. Or in other cases, plausibility is based on generally accepted opinions or assumptions, of the kind often called "common knowledge" (Govier, 1992; Freeman, 1995). Common knowledge is what appears plausibly true to everybody, and so it should not differ significantly from source to source. So Rescher's explanation of why the negation rule is different for probability and plausibility is not the whole story.

Despite its narrow focus (from the viewpoint on plausibility adopted in this analysis), Rescher's account does convincingly show the essential difference between reasoning based on probability and reasoning based on

plausibility. According to Rescher (1976, p. 36), the primary task of plausibility is “to serve as a rational guide to acceptance in the face of inconsistent givens”. But as Rescher shows convincingly (p. 35), “probability is hamstrung in the face of conflict or inconsistency”. The basis of this inability, as Rescher shows (p. 35), lies in the definition of conditional probability:

(Def. Cond. Prob.) : $Prob(A \text{ given } B) = Prob(A \& B) \text{ divided by } Prob(B)$

But as Rescher points out, if B is inconsistent, according to the probability calculus, $Prob(B) = 0$. But dividing by zero is not allowed as yielding any result mathematically. In such a case, the conditional probability is undefined. Plausible reasoning, in contrast, as noted above, is often the kind of reasoning that needs to be used in cases where there is a conflict, or inherent contradiction in a case, that needs to be resolved. This fact, along with others cited by Rescher, shows convincingly that plausible reasoning is inherently different in nature from reasoning based on the probability calculus.

Applying the probability calculus to legal argumentation has often been advocated through the Bayesian approach, introduced in Chapter 1. On this approach, each statement taken as evidence in a trial is assigned a probability value, and then conditional probabilities are updated as new evidence comes in. This approach does not apply very well, in most cases, to how evidence is actually evaluated in trials, as shown by Allen and Leiter (2001). As they pointed out, at the beginning of a trial, the fact-finders begin with different perspectives, so the initial probabilities are subjective (p. 1508). The fact-finders typically do not arrive at any firm commitments until the end of the trial when a mass of evidence has been collected. The Bayesian approach, which requires the updating of conditional probabilities at each step, does not seem to model how legal evidence is evaluated in the trial context.⁶ A proposition that is plausible on a body of evidence on one side in a trial can be implausible relative to the body of evidence on the other side. Which way the judgment swings on this proposition seems to be based on a holistic evaluation of the plausibility of the account or ‘story’ on each side.

But how can it be that both a proposition and its negation are plausible? At first, this idea sounds like an indictment of plausible reasoning. It seems to allow it to embrace contradictory inferences that are somehow suspicious. Rescher’s explanation is that a plausible inference should always be seen as relative to a given body of data. Accordingly, a proposition could be plausible on one body of data while its negation could be plausible on another body of data. This is part of the story, but not the whole story. Both a given

⁶ There has been much discussion on the issue of how well the Bayesian approach can represent legal argumentation. A useful overview of the arguments on both sides has been provided by Nissan (2001), examining the arguments by leading theorists in a special issue of *The International Journal of Evidence and Proof* (vol. 1, 1997) on the subject ‘Bayesianism and Judicial Proof’.

proposition and its negation can, in some cases, even be plausible on the same body of data. For example, you might see something that looks very much like a snake, but you may also know that it is highly unlikely that it is a snake, because the place is one where you would hardly expect there to be any snakes around. Plausible reasoning is the kind of argumentation needed to resolve such a conflict of opinions. In a legal case at trial, for example, there is a basic conflict of opinions to be resolved, and the issue hangs on a balance of considerations. A burden of proof is set, and sometimes an argument with even a small probative weight can tilt the balance to one side or the other. So plausible reasoning normally deals with conflicts of opinions. Something may seem to be true, but there may also be reasons for thinking that it may be false. This aspect seems peculiar at first, especially to those of us who want our arguments to be conclusive and nonretractable. But legal argumentation, like much argumentation in everyday practical affairs, is simply not of this type. When a conclusion is drawn by a plausible inference, that conclusion should be seen as an assumption. As an assumption, it may later have to be given up. There may be a reason to accept it at this point tentatively, but not too much weight should be put on it. Acceptance here has a hypothetical aspect. Tentatively accepting a proposition at a given point, subject to possible later rejection, is compatible with tentatively accepting the negation of that proposition, as an assumption for the sake of argument that may later have to be retracted.

Understanding of how negation should work is fundamental to our grasp of plausible reasoning. Plausible reasoning is most useful in a kind of case in which there is a conflict of opinions and plausible arguments on both sides. Plausible reasoning is ubiquitous in legal argumentation – for example in a trial, where the argumentation is directed toward resolving a basic conflict of opinions. But for some reason, from a modern viewpoint, it is hard to recognize it as a legitimate type of reasoning, and to see it as a distinctive type of reasoning in its own right. Curiously, plausible reasoning was highly familiar in the ancient world. Indeed, logic began with the notion of plausible reasoning, as used by the sophists, who were famous for advocating the view that there are two sides to any argument. The idea of plausible reasoning could be viewed as the basis of all logic, but after the development of Aristotle's syllogistic, somehow this originating idea of plausible reasoning was lost sight of in Western culture. But a glance at some of the ancient views of it will show how vivid and distinctive it is as a common kind of reasoning.

7.2. Theophrastus' Rule and the Weakest Link Principle

Another key condition in Rescher's calculus of plausible reasoning is the so-called *Theophrastus Rule*, named for Theophrastus, a student of Aristotle and his successor as head of the Peripatetic School. Theophrastus' Rule says that in a plausible inference, the plausibility value of the conclusion must be at least as great as the plausibility value of the least plausible premise. Rescher

(1976, p. 15) states what amounts to this rule as his *consequence condition* for plausible reasoning: when a set of mutually consistent propositions in a given set of propositions with plausibility values entails some other proposition in that set, the resulting proposition cannot be less plausible than the least plausible among them. The idea is that each of the propositions in the original, given set is assigned an initial plausibility value represented by a fraction between zero and one. Then when a plausible inference is drawn, from any given subset as premises to a particular proposition as conclusion, an adjustment may be made by changing the plausibility assigned to the conclusion. If the premises are all more plausible than the conclusion, and they are collectively linked to the conclusion by a plausible inference, then the initial plausibility value of the conclusion will be adjusted upward to match the plausibility value of the least plausible premise.

Before going on to discuss Theophrastus' Rule, it is necessary to introduce some facts about the way conditionals are handled in Rescher's system, and in plausible reasoning generally. First of all, in logic we are very familiar with treating conditionals of what might be called the strict type. For example, the material conditional used in classical deductive logic is defined in such a way that the conditional, of the form 'if *A* then *B*', only comes out false if *A* is true and *B* is false. It follows that if *A* is true, then *B* *must* be true. There are no exceptions or loopholes. And the universal generalization, of the 'for all *x*' form, is falsified by even one counterinstance. This strict kind of definition is not characteristic of plausible conditions or plausible generalizations. A plausible conditional has the form, 'If *A* is true, then other things being equal, *B* can normally be expected to be true as well, subject to exceptions'. The plausible conditional is defeasible, in the sense that it admits of exceptions. So it is possible, in some cases, that the antecedent could be true and the consequent false, without defeating the plausible conditional. Similarly, a plausible generalization is not defeated by a single counterexample. The counterexample might show that the case in point is an exception to the rule. But the general rule might still hold. In plausible reasoning then, it is necessary to deal with different kinds of conditionals and generalizations. Some conditionals can be treated as strict conditionals, of the kind that are already so familiar in deductive logic. Some generalizations are absolute universal ones, where 'all' means all without exception. But other conditionals and generalizations need to be treated as being of a looser nature. With a defeasible conditional, if the antecedent is true, it does not *always* have to follow that the consequent is true. A defeasible generalization can still hold, even in the face of a contrary instance in a given case.

Pollock (1995, pp. 95–101) has generalized Theophrastus' Rule to chains of arguments through a rule he called the weakest link principle (p. 99): "the degree of support of the conclusion of a deductive argument is the minimum of the degrees of support for its premises". This principle is meant

by Pollock to apply not just single arguments but to chains of inferences. An example could be drawn from testimonial evidence in a trial. Suppose witness Shawna says she saw Shane leaving a house through the back window on a certain day at a certain time, and suppose that just around that time a burglary had been committed in that house. A chain of defeasible inferences can be constructed by the prosecution leading from what Shawna said about seeing Shane leaving the house to the conclusion that Shane took part in the burglary. This can be done in the way indicated in Chapter 1, using the argumentation scheme from appeal to witness testimony as a main inferential link in the chain. Using the weakest link principle, the argumentation in the whole chain can be evaluated by three steps. The first is to assign a plausibility value to each individual inference in the chain. Then once that has been done for every inference in the chain, one needs to update each value starting from the beginning of the chain and working through to the end. That is the second step. The third step is to examine the whole chain of argumentation and pick out the argument (or arguments, if there is a tie) where the premises provide the least support for the conclusion. This value represents the plausibility that the argumentation chain as a whole offers in support of the ultimate conclusion in the chain. Arguing against “generic Bayesianism”, the view that arguments can be evaluated by probabilistic methods, Pollock defends the weakest link principle as the preferred method of evaluation defeasible argumentation.

8. A Method of Evaluation Proposed

What has been shown is that plausible reasoning is different from deductive and inductive reasoning. Typically, in a plausible inference, if the premises are plausible, they shift a probative weight toward acceptance of the conclusion, provided the inference has a correct structure as a type of plausible inference. The importance of a plausible inference in a legal case typically resides not in the small probative weight of the single inference by itself, but in its combination with many other plausible inferences that together form a body of evidence on one side of a disputed case. What is important is how all the individual inferences are connected together in a body of evidence. As Wigmore (1931) showed, such a body of evidence on one side or the other of a legal case can be represented as an argument diagram, a kind of map showing the interrelationships of all the inferences that represent individual pieces of evidence in the case. Generally, the net effect is a cumulative moving forward of the evidence in a line of reasoning culminating in some ultimate conclusion at issue, to be proved. But in some cases, in legal argumentation, the line of reasoning may have to move backward. When a set of individually plausible premises yields an implausible conclusion, doubt may be thrown on some subset of the premises, or on the set of premises as a whole, depending on the structure of the inference.

The above summary represents the positive conclusions of this investigation. But when it comes to the question of identifying a system of rules for plausible reasoning, the findings only point in certain directions, rather than indicating a single set of rules for all cases. Nevertheless, certain characteristics of plausible reasoning were identified that narrow down the search for rules.

First, the negation rule should admit what Rescher shows, namely that both a proposition and its negation can be highly plausible in a given case. But what also needs to be stated is that when such a case occurs, the evaluation needs to proceed abductively to raise questions about the premises used to get to this pair of opposed propositions. For example, suppose that in a given case, there is a pair of plausible inferences, 'A, therefore B' and 'C, therefore B'. How should the evaluation proceed in such a case? How it should go is that questions should be raised about A and C. If one is highly plausible and the other is not, then the less plausible one should be rejected, and the more plausible one accepted, other things being equal in the case. The negation rule, in short, should indicate how to reason backward, in a given case, in an instance where both a proposition and its negation are plausible (initially).

Rescher's account of the system of plausibility evaluation is relatively simple. The simplest first step is that of evaluating the arguments as though they were deductively valid. But in fact, most of the arguments used in legal reasoning are presumptive in nature, and are not deductively valid. Nor, as Pollock argued, can they be very well represented in the most common kinds of cases of legal evidence as probability calculations using the Bayesian axioms. For example, the first linked argument in the case above is an argument from witness testimony. This form of argument is not deductively valid, nor is it helpful to see it as inductively strong. It is a typical defeasible argument. All that can be said in evaluating it is that at this stage of the investigation or presentation of evidence in the case, if all the premises are true and no critical questions have been asked yet or rebuttals put forward, the conclusion is plausibly true. What could be done to quantify the probative weight for such an argumentation scheme is to put plausibility numbers on the arrows in the argument diagram. Then the evaluation should follow the three steps for applying the weakest link principle outlined above. The first step is to judge the strength of each single inference in the argument diagram. Then the weakest link is determined by looking over the whole diagram. Another method would be to enable the diagram system to prompt the user to ask the standard critical questions once a particular argumentation scheme has been invoked.⁷

⁷ Methods of extending standard argument diagrams from the view of an argument as product to a view of the argument as process have been discussed by Reed and Walton (2003).

The other thing about the rules that has become apparent is that a careful distinction needs to be made, in conducting any evaluation, between linked and convergent arguments. What is needed is some kind of notation to distinguish, on the argument diagram, between linked and convergent arguments. There seems to be little agreement in the literature on how to mark such factors on an argument diagram. But to use argument diagrams effectively to evaluate legal argumentation, clearly some methods of taking these factors into account need to be developed. This problem can be dealt with on a case-by-case basis. If the textual evidence leaves room for doubt on whether a given argument is linked or convergent, the best policy is to diagram it as convergent, giving your reasons. In some cases, it is useful to construct alternative diagrams to represent different interpretations. There are all the usual problems of making assumptions about meaning when working with a natural language text of discourse. Using an automated system of diagramming such as *Araucaria* can still be extremely helpful, however, in cases of legal argumentation.

If an argument is linked, then if the conclusion is implausible, using backward reasoning, at least one premise may have to be reduced in plausibility value. But if the argument is convergent, both premises have to be reduced in value, to restore equilibrium to the argument in a plausibility adjustment. In a case of forward reasoning, Theophrastus' Rule is applicable to linked arguments, but not to convergent arguments. In a convergent argument, the plausibility value of the conclusion should be adjusted upward to that of the most plausible premise. In other words, Rescher's rules need to be modified to take convergent arguments into account. What is needed is to add to Theophrastus' Rule, or the least plausible premise rule, a new rule – the most plausible premise rule – which is applicable to cases where the argument has a convergent structure.

The reasons why Theophrastus' Rule applies to linked arguments but not to convergent ones are essentially pragmatic. In the case of a linked argument, if either premise is deleted, or is questionable, the whole argument falls down. The least plausible premise is therefore always the most vulnerable point of attack for a critic to exploit. If that vulnerable point can be attacked, the whole argument will fall down. Therefore, the argument is only as strong as its weakest premise. And therefore, it makes sense to use the following plausibility rule for evaluating linked arguments: support for the conclusion should be tied to the least plausible premise. Hence Theophrastus' Rule seems to be appropriate – the conclusion should be assigned a plausibility value at least as high as that of the least plausible premise. If the conclusion was already highly plausible, without the support of the premises being considered in the given case, it will remain highly plausible. But if the conclusion was initially less plausible than any of the premises, then its plausibility value should be brought up to the level of that of the least plausible

premise. Theophrastus' Rule makes sense as applied to linked arguments. But in the case of a convergent argument, the situation is quite different. In a convergent argument, if a critic attacks and refutes one premise, the line of argument from the other premise is still viable, and could, in some cases, provide strong support for the conclusion. So if one premise falls out of consideration, support via the other could make the conclusion still highly plausible. The appropriate plausibility rule for convergent arguments seems to be the following one. The conclusion should be assigned a plausibility value at least as high as that of the most plausible premise. Thus for convergent arguments, instead of the least plausible premise rule (or Theophrastus' Rule), we get the most plausible premise rule.

Putting these two rules together for purposes of evaluating a complex sequence of argumentation in an argument diagram that combines linked and convergent argumentation, the result is the *Maxmin Rule* stated in Walton, (1992, p. 43). This rule gives the following instructions. At each local argument in the sequence of connected argumentation, use the least plausible premise rule if the argument is linked, and use the most plausible premise rule if the argument is convergent. Then over a longer sequence of connected linked and convergent arguments, the plausibility values can be adjusted upward and downward all along the sequence, resulting in a final outcome of assessed plausibility value for the ultimate conclusion in the sequence.

To illustrate with an example, let us represent the initial plausibility value of each proposition in the paint case on a scale from zero to one as follows. A completely plausible proposition, like a logical tautology, gets a value of one. A completely implausible proposition, like a logical contradiction, gets a value of zero. A proposition with a value of 0.5 is said to be equally plausible or implausible, which can occur if nothing is known about whether it is plausible or not. Accordingly, let's say that in the given case, the propositions are assigned initial plausibility values as shown in the *Araucaria* diagram of the paint case, Figure 7.5. In accord with the plausibility rules, what needs to be done is to sequentially adjust the given plausibility values. Let us say that *E* has an initial plausibility value of 0.2 and that *G* has an initial value of 0.4. Let us say that the premises in the argument have the following initial plausibility values: *A* (0.8), *B* (0.6), *C* (0.7), *D* (0.8), and *F* (0.7). Looking at the linked argument on the left, we can see that the weakest premise is *B*, which has a plausibility value of 0.6. Looking at the linked argument on the right, we can see that its weakest premise, *F*, has a value of 0.7. To judge support for *G*, we need to take the stronger of the two linked arguments, because together they form a convergent argument for *G*, so we select the one on the right. The plausibility value of *G* is then boosted to 0.7. Since *G* is a single argument for *E*, we can now boost the plausibility value of *E* to 0.7. This new plausibility value can then be taken to

represent the probative weight that the mass of evidence pictured in the diagram offers in support of the ultimate conclusion to be proved, *E*. However, this evaluation assumes that each inference represented as an arrow on the diagram is deductively valid. Each inference would have a value of 1. A presumptive argument form represented by an argument scheme, like appeal to witness testimony, is defeasible. To reflect the plausibilistic nature of such an inference, a number between 0 and 1 could be put on each arrow representing the strength of the argument. Then the adjustment upward of the conclusion could be limited to this degree of plausibility. In effect, the plausibility of the inference would also function as a least plausible premise.

8.1. Summary of the Evaluation Method

The general method for applying plausibility rules to evaluate evidence in a typical case of a trial can be summed up as follows. The method is based on three key assumptions. One is that the whole body of evidence can be represented by an argument structure like that of *Araucaria*. The second assumption is that each proposition represented as a point or node on the diagram can be assigned some form of comparative rating, indicating its probative weight as a plausibility value. The third assumption is that each arrow that goes from one point to another in the digraph, can also be assigned such a plausibility rating representing the strength of the inference. Then the method of calculating ultimate plausibility values from initial plausibility values requires the following steps.

1. First of all, set up the whole body of evidence by representing it as an argument diagram in the form of a directed graph. In *Araucaria*, the user needs to go through the text of discourse, find the ultimate conclusion, mark up the premises supporting it, and then mark up each argument supporting each premise. This process is continued until all the arguments contained in the text are represented on the diagram. Each point (node) on the graph represents a proposition that is a premise or conclusion in some argument. Each proposition is assigned an initial plausibility value.
2. Each arc (arrow) on the graph is assigned a value representing the strength of the inference from its start proposition to its end proposition. The complication is that many arguments are multi-premised. So where there is a pair of premises, or a set greater than two, the notation on the graph must indicate whether the argument is linked or convergent. In diagramming witness testimony evidence, care must be taken to classify the evidence as corroboration, convergence or credibility corroboration. The arcs on the graph can be numbered or otherwise annotated in such a way that it is clear which arguments are linked and which are convergent.

3. Beginning at any node on the digraph, each single argument must have the plausibility value of its conclusion re-evaluated, depending on three factors. The first factor consists of the initial plausibility values of the premises. The second factor concerns the plausibility values assigned to the inference from the premises to the conclusion, indicating the strength of the argument. The third factor is the structure of the argument (whether it is single, linked or convergent). By this means, a new plausibility value is assigned to the conclusion.
4. This process, beginning with one local subargument, is carried out over each connected subargument, until all the propositions in the whole digraph have been assigned new plausibility numbers. At any single step, if the argument is linked, Theophrastus' Rule (the least plausible premise rule) is applied. If the argument is convergent, the most plausible premise rule is applied. One argument can corroborate another by supporting a premise of the first argument in its scheme.
5. As Wilson (1960) showed, the evidence on one side in any legal case at trial can be broken down into a logical structure containing a main claim or proposition to be proved or cast into doubt, the ultimate *probandum*. The general method of proving this proposition in law is to prove another set of propositions closely related to it, called the ingredients. In any graph, there will be one ultimate conclusion, representing the proposition to be proved relative to the body of evidence in the entire case. The process of re-evaluation should start at the other end of the graph, and move toward proving each of the ingredients. Once it is completed, each item of evidence moves into one of the ingredients, and they in turn prove the ultimate *probandum*. Looking over the whole argument diagram, the weakest link is selected. This plausibility value represents the probative weight of the mass of evidence supporting the ultimate conclusion of the argumentation in the diagram.

A tricky part is that the movement of assigning successive plausibility values cannot always move forward. In some cases, it will have to move backward.

In later chapters it will be shown how the process of argumentation analysis and evaluation works, from the point where a witness is examined in court, and gives an account of what supposedly happened, to the point where the trier decides the outcome of the case. The argumentation in this process is based on plausible reasoning that adds new conclusions by plausible inferences, and that fills in gaps in the original story, once again based on plausible inferences. The nonexplicit parts of the story that are filled in are best regarded as tentative hypotheses (assumptions) only. But the plausibility of these assumptions can be tested out in examination dialogue in

which a questioner examines the witness. At later stages of the trial, the story given by one witness can be judged as relatively plausible or implausible in relation to another opposed story related by another witness. The trier can evaluate both stories and judge which one appears to be the more plausible of the pair.

Scripts, Stories, and Anchored Narratives

To get closer to a useful method of analyzing and evaluating witness testimony as evidence, we need to look more closely at what actually happens in trials. What typically happens in a trial is that when a witness is examined, the examiner will ask a series of connected questions all designed to probe into the particulars of some situation. The answers given by the respondent will tend to hang together in a coherent unity, sometimes called a ‘story’. The use of this term implies a certain skepticism, suggesting that the story may not really be true, and that it may be fabricated, like a fictional story. So when the examiner probes into the story, she may test out its coherence, as well as trying to just elicit further details. At any rate, it seems to be the story itself that guides how the testimony is evaluated as evidence (Bench-Capon and Prakken, 2005). The so-called story is really just the collected set of assertions forming an account of some supposed event reported by the witness. But since the witness is (presumably) in a position to know about the subject he is being questioned about, as shown in Chapter 1, this collected set of assertions can be filtered through argumentation schemes to provide evidence. Because appeal to witness testimony is evidence, presumably based on a rational form of argument, conclusions can be drawn from what the witness says. These conclusions are hypotheses about what really (or supposedly) happened, or what is really (or supposedly) the truth of the matter. As hypotheses, they can be tested by asking questions about them during the process of examination that takes place in a trial.

1. Scripts and Stories

Recent studies in artificial intelligence have emphasized that much of the reasoning used in everyday argumentation is based on premises that are not explicitly stated, but are implicit in the context of the argument. The implicit and explicit elements fit together into a coherent body of information, called a script by Schank and Abelson (1977). A script, in the sense

of the word used in artificial intelligence, is a body of knowledge shared by language users concerning what typically happens in certain kinds of stereotypical situations the language users are familiar with and can be expected to know about. The script enables a language user to fill in gaps in inferences that were not explicitly stated in a given text of discourse. For example, the given text of discourse could be a story describing a familiar kind of incident. Schank and Abelson use the restaurant story to give an example of script-based reasoning. To tell the story, a number of explicit propositions are asserted, as follows. John went to a restaurant. The hostess seated John. The waitress gave John a menu. John ordered a lobster. He was served quickly. He left a large tip. He left the restaurant. Given this brief story, anyone can infer that certain other propositions are plausibly meant to be asserted as well, even though they were not explicitly stated. It would be plausible to assume that lobster was listed on the menu. It would be plausible to assume that John ate the lobster. It would be plausible to assume that John paid something for the meal, after he ate it and before he left the restaurant. Each of the assumptions might possibly be false. But given the normal way things transpire when a customer goes to a restaurant, all these assumptions are plausible. They are plausible to infer, because they are part of the normal sequence of events – the script – that we are all familiar with in our experiences of going to restaurants. These conclusions are drawn by a process called “implicature” by Grice (1975), as opposed to implication, because they are based on contextual presumptions drawn from shared assumptions about the directions a conversation is taking. When someone is telling you a story, certain essential assumptions without which the story makes no sense are taken for granted. Even though they are not explicitly stated, if they may be presumed to be already known to the hearer as well as to the speaker, they can be taken for granted. Since the speaker makes no point of denying them, the hearer assumes that they are included in the information being passed on to him. For example, suppose that in a letter of reference, all the proponent wrote was that the candidate is a good speller and attended classes regularly. The respondent would draw the conclusion that the speaker is conveying the information that the candidate lacks the kind of qualities of excellence required for the position. Why? Because if the candidate had such qualities, the writer would normally be expected to cite them. If they are not cited, by negative reasoning an inference is drawn.

1.1. *Missing Information in a Story*

This notion of the script has been adapted to legal discourse of the kind commonly found in a trial by Wagenaar et al. (1993). Their theory is built around the observation that a court cannot decide a case on individual facts by themselves, apart from the context of what is often called a ‘story’. What is a ‘story’, and how is a story used as a framework for logical reasoning in

which conclusions are drawn? Wagenaar et al. (1993, p. 33) present a simple illustration to answer these questions.

1. Margie was holding tightly to the string of her beautiful new balloon.
2. Suddenly, a gust of wind caught it.
3. The wind carried it into a tree.
4. The balloon hit a branch and burst.
5. Margie cried and cried.

This small story is comparable to the restaurant example of the script provided by Schank and Abelson. The five explicitly given propositions hang together in a context. They make sense within a kind of narrative background that permits certain conclusions to be drawn, based on information not explicitly stated. When we first look at the story, it appears that Margie might not have let go of the balloon, and that she was carried along with it, up into the tree. It would appear likely, in such a case, that Margie would have fallen from the tree, with probable injurious consequences. Nothing in the story rules out drawing these inferences. But they seem implausible. It is more plausible to infer that after the gust of wind caught the balloon, Margie let go of it, and then the wind carried it into the tree. After all, if Margie had been carried up into the tree, and fallen out of it, these consequences would be highly noteworthy. Since there was no mention of them, we presume that in fact, these outcomes did not occur. Our reasoning is what is more often called default or lack-of-evidence reasoning. This form of reasoning in traditional logic is called the argument from ignorance.¹ It works by drawing a plausible presumption from what is not known, or has not been stated, in a given case. As Wagenaar et al. (1993, p. 33) describe the case, such conclusions are drawn because the story “strongly suggests a number of things that remain implicit” and that are plausible to infer.

For instance, it is suggested that the wind caused the balloon to fly away. But what about the string? Did Margie not hold it tightly? Was the wind so strong that Margie could not have possibly held onto it? Rather unlikely. A lawyer, defending the wind in court, would have argued that the sentences (1) and (2) are contradictory. In fact, Margie let go of the balloon, *after which* the wind caught it. In sentence (4) a causal relationship is suggested: the balloon burst *because* it hit a branch. But there is only a juxtaposition; it is possible that the balloon burst for another reason, e.g. because a boy hit it with his catapult. In sentence (5) it is said that Margie cried, and we assume that this is caused by the loss of her balloon. But it is possible that she cried for a different reason, e.g. because the sudden gust of wind frightened her.

What happens is that as soon as we are told the story composed of items of information (1) through (5), we fill in gaps by drawing plausible conclusions. These plausible conclusions seem to be true, and are reasonable

¹ This kind of negative reasoning, briefly mentioned in Chapter 1, will be analyzed in Chapter 8, Section 4.

presumptions, but they could be false. It is precisely because of what we are not told that we infer the missing information by drawing plausible conclusions that fill out the story. The information that is generated is not in each of the individual propositions (1) through (5) only. When you put them all together, a context is created, and an expanded set of propositions is given as plausible information by the story as a whole. In artificial intelligence, as noted above, such a story is called a ‘script’. But the script is composed of not only the explicitly given set of propositions that are written down, or otherwise presented as information. The given set of propositions is amplified by the unstated assumptions that can be drawn by plausible inferences from the given propositions, in context. The whole story, comprising both the explicitly given propositions and the inferred plausible assumptions, is the script.

1.2. *What Makes a Story Plausible*

In legal cases of examination dialogue, it is evident that what the examining attorney typically seeks and gets from a witness is not just a single proposition – a single item of information designated in advance as what is wanted. Instead, the questioner gets a story. She poses a connected sequence of questions that supposedly have the aim of getting the witness to present the relevant facts that he is in a position to know about. Typically, the sequence of questions and replies takes the form of the unfolding of a story. Each answer fits in with the previous ones, and a connected or coherent account begins to be filled in. One thing that makes such a story appear plausible is how well connected it is, as a whole story. Another thing that is important is how plausible the story is. Does it relate a chain of events that appear impossible or improbable, or does it tell a story that sounds as if it could have easily happened? These are the kinds of criteria that are important to testing the plausibility of the story as a whole and the plausibility of the conclusions that may be drawn from it.

In a series of studies, a group of researchers (Hastie, Penrod, and Pennington, 1983; Pennington and Hastie, 1991, 1993) explained what makes a story plausible as a function of three factors: goals, physical conditions, and psychological conditions. For example, as shown by Pennington and Hastie (1991, p. 526), an obstacle (physical condition) might block a person’s carrying out her goal, making her angry (psychological condition). A good story strings these factors together in a coherent order that makes drawing a conclusion a “logical” outcome (Hastie et al., 1983, pp. 22–3). For example, a person whose goal is blocked by the actions of another person becomes angry, we are told. When a crime results, it can be seen as a “logical” outcome of these prior conditions, as related in a story (Pennington and Hastie, 1993, p. 197). Hastie et al. (1983) also did empirical studies showing that the order in which evidence is presented before a jury has a major influence on the judgment in a case. These empirical data can be

taken to indicate that the party who presents evidence in a story order will be seen as having more plausible evidence.

In the story model of juror decision making set out by Pennington and Hastie (1991, p. 522), trial evidence is presented to the jury. Through its knowledge about similar events and its knowledge of story structures, the jury constructs several stories. Some stories may be implausible, and other stories may be incomplete, but one story will be selected by the jury to accept as an explanation of what happened in the case. The jury must then match the accepted story to verdict categories, and that is how the jury reaches a decision in a case. The so-called story is simply an account, or set of statements, given by a witness, supposedly representing the truth of some matter that the jury is not (directly) in a position to know about. But, presumably, the witness is in a position to know about the matter. Therefore the problem is basically one of how to access the knowledge or information that the witness possesses, in a form that the jury can use. The jury needs to decide which side in the trial has the most persuasive argument. The information possessed by the witness could be useful as evidence to assist in making this decision. Whatever the witness says in reply to questioning about the matter is 'evidence' in the legal sense of the term. But of course, as shown in Chapter 1, such evidence is defeasible. It can be more or less plausible, depending on various factors.

2. Anchoring and Plausibility of Stories

The kind of evidence mostly used in trials is based on witness testimony. But witness testimony is fallible and can be mistaken. Therefore, an important function of the kind of examination dialogue typical of trials is that of testing out the information received through testimony, to try to judge whether it really is reliable information of the kind that can be used as evidence. To evaluate testimony as plausible, we check it out against facts that we think are highly plausible, and that we have no reason to doubt. This process of checking testimony against other facts we have no reason to doubt is called "anchoring" by Wagenaar et al. (1993, p. 39). A good story, on their view, is more plausible if it can be based on what they call "safe anchors". For example, suppose a defendant in a criminal case claims that he was elsewhere at the time the crime was committed. This piece of testimony may not be very plausible by itself. But suppose that two police officers give sworn testimony that they saw him at the location he claimed to be, at that time. This anchoring of the defendant's story makes it more plausible than it was before. According to Wagenaar et al., anchoring is based on general common-sense rules that support inferences. For example, suppose it is taken as a common-sense rule that police officers in the line of duty may be generally assumed not to be lying. And suppose that, as in the case above, two police officers testify to having seen some person at a specific

time and place. By inference from these two premises, it is reasonable to draw the conclusion that the person in question was present at that time in that place. It is possible that the police officers are mistaken or lying. But generally we would assume they are not, unless there is further evidence to the contrary. So the safety of an anchor is relative. An anchor may be tentatively accepted, but further probing into a story may cast doubt on it. For example, even though it may be conceded that generally police officers in the line of duty do not lie, there may be evidence in this specific case showing that in fact these two police officers did lie. This could be shown by means of a further anchored narrative showing the goals of the police officers and the other physical and psychological conditions of the case.

Anchoring is based on appeal to witness testimony as a form of argument, in cases such as that of the two police officers. According to the position to know premise, we presume that the police officers really did see the person in question at some time and place. According to the truth-telling premise, we presume that the police officers are telling the truth. Given these premises along with the statement premise and the warrant, the conclusion that what the police officers said is true follows as the conclusion to be inferred. The significance of the anchor as a kind of evidential factor stems from the assumption that the witness was in a position to know. Anchoring can be explained, according to the subsumption model of legal argumentation presented in Chapter 1, as a chaining of two arguments. In the case above, there was first an appeal to witness testimony. Then there was an argument, based on the generalization that police officers may be assumed not to be lying, that supported this first argument. This shows that the kind of evidence found in a typical legal case links two arguments together in a chain of reasoning, of the kind that is typically represented by an argument diagram.²

In other cases, an argument may contain not only supporting reasons, but also attacking reasons, in the form of rebuttals or criticisms. The argumentation in this kind of case can be illustrated by the fingerprints on the knife dialogue in Chapter 4, Section 1. It was argued that John is guilty based on the supporting reason that John's fingerprints were found on the knife. But then this argument was attacked by presenting the testimony of a witness who saw John pull the knife out of the dead body. Verheij (2001, p. 4) defined a dialectical argument as one that contains not only supporting reasons for a claim, but also attacking reasons that go against the claim. Thus even the simplest cases of witness testimony used as evidence in a trial show that the theory of anchored narratives makes most sense in a dialectical framework. Verheij (2001) has argued that the theories of anchored narratives and dialectical argumentation fit together very nicely. He showed how they fit by using examples of how appeals to witness testimony are typically

² Argument diagrams will be explained in Chapter 7, Section 6.

used as evidence in trials. The theory of anchored narratives presents a kind of structure that serves to impose order and purpose onto the sequence of questioning and answering in examination dialogue in a trial. The questions and replies can be connected to each other, and to the previous and forthcoming moves in the sequence of dialogue, as having the aim of presenting an anchored narrative. First, there is a story that connects all the questions and replies together as part of a narrative sequence of events and actions, connected together by the goals and the physical and psychological conditions of the agents who were involved. The story hangs together, and this hanging together or narrative coherence is what makes the questions and replies relevant. This coherence is also a large part of what makes the story plausible.

2.1. *Testing a Story by Critically Examining It*

But there is another factor as well that is essential to making sense of examination dialogue. That is the testing of the story by the asking of probing questions and the matching of the story against other known facts or highly plausible assumptions. This aspect is the so-called anchoring of the narrative. Many of the questions asked by the examiner will have the function not just of eliciting the story, but of testing its plausibility. In a typical criminal trial, for example, there will be two stories in the case, one on each side. Each story will represent a kind of lengthy explanation of what happened in the case. Each story will be somewhat plausible. Usually one story will be more plausible than the other. As the witnesses are examined in the trial, more of the stories on both sides will be presented. At the same time, other evidence will be introduced, such as expert testimony about blood samples or fingerprints, that may provide anchors for the story on one side or cast doubt on the plausibility of the story on the other side. The asking of questions in cross-examination may also turn up inconsistencies or implausible conclusions, drawn from statements made as part of the story professed by one side or the other. In the end, the trier will arrive at a decision on which story of the pair offered is the more plausible.

After studying many trials in the Netherlands, Wagenaar et al. (1993) found that the presentation of a good narrative, particularly by the prosecution, which gets to present its story first, is highly compelling in court and hard to dislodge, once set in place. They found (p. 58) that a good story, once set in place, tends to take precedence over facts, once the trier has accepted the story as plausible. This finding could be significant in relation to recent worries about the surprising number of wrongful conviction cases in North American courts. It would seem that once a plausible story has been presented in court, and the trier has accepted it as the best explanation of the facts, a kind of prejudicial attitude may be set in place. Having accepted the story as a way of organizing the data already presented, the trier may be very reluctant to move to a different story. In other words, once a whole

mass of data has been unified and coherently organized into a single story, there may be a strong tendency to try very hard to fit any new facts into the existing story rather than to move to a new story. In other words, once a story has been built up and solidified, it becomes like a fortress that is hard to undermine. This finding can have serious implications for the kinds of cases of wrongful convictions cited in Chapter 1. Once prosecutors move forward with collecting evidence that seems to show that a suspect is guilty in a criminal case, for example, there is a tendency to expend efforts amassing evidence that seems to support this hypothesis while neglecting evidence that seems to suggest some other hypothesis. As the story goes to court it may look very solid, and it can be very hard to find weak points in it.

How can a cross-examiner undermine a plausible story, once it has been set into place? There are three ways, according to Wagenaar et al. (1993, p. 58): (1) show that some part of the story cannot be true, (2) show that some part of the story is not anchored on safe common-sense rules, or (3) present an even more plausible but different story that can be used to explain the same facts. In other words, the only way to defend against plausibility is to use plausibility. Basically, you have to show that the existing story is implausible or to present another story that is more plausible than the original one. Typically, strategy in legal argumentation in a trial will combine both methods of attack. And both sides will use the same double strategy. Each side not only will try to undermine the plausibility of the story presented by the other side, but also will present its own story as a better explanation of the known facts of the case.

Undermining the plausibility of a story is comparable as a type of dialogue to the kind of exetastic critiquing process recognized in computer science. As will be shown in Chapter 4, Section 8, the critiquing process has been studied in artificial intelligence, in cases where a human user is collaborating with a machine knowledge base, such as an expert system. The machine produces a task result, in the form of an electronic document, representing the proposed solution to some task set by the user. According to Silverman (1992, p. 118), the critiquing process works not by disproving the task result, but by critiquing the “credibility” of the knowledge in it. What does he mean by this expression? He explains by bringing in a third party called “observers”. They are presumably an audience judging the task result, and the credibility of the task appears to matter to how they judge it. How do the observers judge the task result? Silverman proposes four tests (pp. 117–19) and states that the observers will reject the credibility of a body of knowledge if it fails any one of these four tests. The first test is clarity (p. 117): unclear statements that are ambiguous are harder to falsify. The second test is coherence (p. 119): coherence deals with the “abstract truth, or the logical structure of sentences”, and would presumably include questions of logical consistency. The third test is correspondence (p. 119):

correspondence concerns “the agreement of statements with reality”. The fourth test is workability (p. 119): workability requires “a mutual exchange of viewpoints and a two-way communication” between the two parties in the dialogue. For example, the dialogue should not be a “one-directional sermon” from the one party to the other. Workability implies testing out the knowledge through a dialogue that is based on open critical questioning, and making revisions, on both sides. Silverman’s method of critiquing, as a type of argumentation, is essentially the same method that is used by a cross-examiner to attack a narrative given by a witness in a trial. The kinds of cases often encountered in witness examination in court can be much more dramatic, extensive, and colorful, however. In some cases, one lengthy story will directly contradict the story given by another witness. If it is difficult or impossible to resolve this conflict of stories by applying any of the tests cited above, all kinds of other arguments can come into play.

It is important to recognize that in this battle of competing narratives, the weapons used are arguments that are personal, emotional, dramatic, and often based on suggestion and innuendo. Personal attack is used to paint a witness or the defendant as a person of bad character, who is unreliable and is not credible as a witness. Appeal to emotions such as pity and sympathy are used to portray someone as a victim, even though he has been accused of some horrific crime. Appeal to popular or public opinion is used to bolster a story as plausible or to attack an opposing story as implausible. Appeal to expert opinion based on testimony of scientific experts is more and more used as a powerfully persuasive form of evidence in trials. Each of these kinds of argumentation is, in itself, fallible and inconclusive. Why is it then that such forms of argument are so often used in trials and can be extremely powerful when used in the right way at the right time? The reason is that the trial is a competition between two opposed stories. The problem for the trier is that both stories are somewhat plausible. The problem is to decide which is the more plausible of the two. The trial swings on a balance of plausibilities. An argument that is weak and inconclusive by itself, but is nevertheless plausible, can make an important difference in a case, because it can swing the balance one way or the other. Also, a bundle of individually plausible arguments can have a cumulative effect, building up to a body of evidence that is strong enough to swing the case to one side or the other. So these various kinds of plausible arguments, often traditionally categorized as fallacious in logic, have an important place in legal argumentation. They are the methods used to build up the plausibility of an anchored narrative representing one side of a case. They are also the methods used to attack and undermine that anchored narrative. Once it is seen how the structure of argumentation in a trial is all built around the relative plausibility of a competing pair of narrative accounts or stories, the probative weight and relevance of these various kinds of plausibilistic arguments are explained. They all have their places as methods of anchoring or undermining a story.

3. Components of a Story

The notion of a story is made up of three basic components. First, there is an explicitly given set of propositions – a set of assertions put forward in a particular order. Let us call this explicitly given information the text of discourse, or ‘text’ for short. Second, there are other propositions that can be inferred from those in the text as plausible assumptions. But these inferred propositions have a status different from that of the initial set of propositions explicitly stated in the text. They are not assertions, but only assumptions. Even so, it can be highly plausible to infer them as conclusions from the set given in the text. But all such inferences depend for their reasonableness on the context of discourse. This context is put in place, as common to the writer of the text and the reader of it, in virtue of the common knowledge they share about familiar situations and how they can normally be expected to work. This contextual knowledge can be fitted as a framework onto the information given explicitly in the text. Then these two factors, taken together, warrant the plausible inferences used to draw conclusions about what probably happened in the situation. The third component is this new set of propositions drawn by plausible reasoning from the context and the given set of propositions.

Let us call the original set of explicitly stated propositions the set *E*. Then let us call the derived set of propositions the set *D*. Any member of the set *D* will be derived from some subset of the set *E* by a process of logical reasoning. The inference from some premises in *E* to some conclusion in *D* will have a logical form. But that logical form will depend on the context. The warrant for the unexpressed premises needed to derive any member of *D* by logical inference has to be partly found in the context. This context is the so-called common knowledge shared by the speaker and hearer, concerning how things may be normally expected to go in types of situations both are familiar with. What represents this body of common knowledge, as applied to a given case, is a script *S*. In any given case, script *S* taken together with set of propositions *E* is the basis of premises from which the conclusion that is a member of *D* is drawn. These three components furnish the inferential structure whereby conclusions are drawn that fill out the story in any given as a coherent body of information. But what kind of inferences are used? Are they deductively valid inferences or inductively strong inferences, for example? The answer is that they can be, in many cases, but there is an even more typical kind of inference used to knit together a coherent story of the kind that so often feature in a legal case.

3.1. *Practical Reasoning in Stories*

It is clear from the analysis of stories given by Pennington and Hastie that in common kinds of stories of the kind that would be found in legal cases in trials, goal-directed reasoning is central. Their analysis suggests the importance

of the structure of logical inference traditionally called practical reasoning in philosophy (von Wright, 1972). According to Hitchcock (2002), practical reasoning was first recognized as a distinctive type of reasoning by Aristotle when he wrote (*Nicomachean Ethics* III.31112b15–20) that good deliberation begins with a wish for some end and follows through by a means that is a first step to attaining it or additional means that may be needed to carry out that first step. Practical reasoning is a chaining together by an agent of single practical inferences. An agent is an entity that not only can carry out actions, but also can perceive the consequences of an action and modify its subsequent actions in light of this feedback (Franklin and Graesser, 1996). The basic unit is the practical inference. The conclusion of one inference becomes a premise in the next one in the chain. Such a practical inference has two premises. The goal premise states that the agent has a particular goal. The means premise states an action that would contribute to the agent's realization of the goal. In the analysis given in Walton (1990, p. 85), a practical inference has the following form. The letters *A*, *B*, *C*, . . . , stand for propositions that can be made true by an agent. The agent is referred to by the use of the first-person pronouns 'I', and 'my' in the schema for the practical inference.

(*PInf.*) *A* is my goal.
 To bring about *A*, it looks as if I should bring about *B*.
 Therefore, as far as I can tell, I ought to bring about *B*.

The conclusion of a practical inference is expressed in terms of a 'practical ought', meaning that the agent ought to bring about *B*, assuming that bringing about *A* is her goal and that bringing about *B* is necessary to bring about *A*. Clarke (1985) and Audi (1989) express the goal premise in terms of the wants or intentions of the agent. Here we have used the more neutral term 'goal'.

According to the analysis of Walton (1990), each practical inference used in the context of dialogue should be seen as having a matching set of critical questions. When the practical inference has been put by a proponent to a respondent in a dialogue, the conclusion may be plausible to derive, depending on how plausible the premises are. By using one or more of the following five appropriate critical questions, the respondent can question the plausibility of a practical inference.

- CQ1.** Are there alternative possible courses of action to *B*?
- CQ2.** Is *B* the best (or most acceptable) of the alternatives?
- CQ3.** Do I have goals other than *A* that ought to be taken into account?
- CQ4.** Is it possible to bring about *B* in the given circumstance?
- CQ5.** Does *B* have known bad consequences that ought to be taken into account?

The belief–desire–intention (BDI) model of practical reasoning is based on the agent’s beliefs, desires, and intentions, as opposed to the agent’s commitments (Wooldridge, 2002, Chapter 4). The conclusion, on Aristotle’s account of practical reasoning, is a decision to take action. On Bratman’s (1987) version of the BDI model, intentions, as well as desires (wants) and beliefs, need to be seen as components. Pollock (1995) added what he called “likings”, as well as desires. A problem for the BDI model is that beliefs are not transferred from the premises to the conclusion of a practical inference (Searle, 2001, p. 241): even though I believe proposition *A*, and proposition *B* is a logical consequence of *A*, it need not follow that I believe that *B*. This problem can be made more tractable by moving from belief to acceptance (commitment), of a kind that does not require or necessarily imply belief.

It can be argued that there is an additional type of practical reasoning that takes values into account and that is needed to supplement the instrumental scheme above, that does not take values into account. Atkinson, Bench-Capon, and McBurney (2004, p. 88) cited an example of two connected practical inferences that are connected in a chain of practical reasoning.

I want to be in London before 4:30.
 The 2:30 train arrives in London at 4:15.
 So, I shall catch the 2:30 train.

Friendship requires that I see John before he leaves London.
 The 2:30 train arrives in London at 4:15.
 So, I shall catch the 2:30 train.

As Atkinson et al. (2004, p. 88) pointed out, the action in the conclusion is justified in the second case not in purely instrumental terms, but in terms of an underlying general social value, friendship. On their account (Atkinson et al., 2006), three elements need to be considered as the result of performing an action: the state of affairs brought about by carrying out the action, the subset of this set that forms the desired features (the goal), and the reason that the goal is desired (the value). They describe values as social interests that explain why goals are desirable.

In their model, goals are propositional formulae on the set of propositions, and values are functions on goals. Values are taken to provide a reason for an agent’s for wanting to achieve a goal. In the model (Atkinson, 2006, p. 168) the following value-based argumentation scheme for practical reasoning is presented.

Value-based Argumentation Scheme for Practical Reasoning

In the circumstances *R*,
 we should perform action *A*,
 to achieve new circumstances *S* that realize goal *G*,
 which will promote some value *V*.

Atkinson uses this structure as the underlying model of reasoning used to build computer programs based on artificial intelligence for use in systems of electronic deliberation.

The value-based model (Atkinson, 2005, p. 71) adds other critical questions relating to values to those of Walton (1990) given above, resulting in sixteen critical questions.

Sixteen Critical Questions for Value-Based Practical Reasoning

1. Disagree with the description of the current situation.
2. Disagree with the consequences of the proposed action.
3. Disagree that the desired features are part of the consequences.
4. Disagree that these features promote the desired value.
5. Believe the consequences can be realized by some alternative action.
6. Believe the desired features can be realized through some alternative action.
7. Believe that the desired value can be realized in an alternative way.
8. Believe the action has undesirable side effects which demote the desired value.
9. Believe the action has undesirable side effects which demote some other value.
10. Agree that the action should be performed but for different reasons.
11. Believe that the action will preclude some more desirable action.
12. Believe that the circumstances as described are not possible.
13. Believe that the action is impossible.
14. Believe that the consequences as described are not possible.
15. Believe that the desired features cannot be realized.
16. Disagree that the desired value is a legitimate value.

Practical reasoning used by a proponent in a dialogue renders a conclusion conditionally plausible, subject to possible criticisms of the respondent. It shifts the burden of rebuttal or questioning onto the other party, thus setting the conclusion provisionally into place as a commitment until this burden is discharged. The conclusion is only an assumption, and its acceptance should be tentative, subject to further discussion. Thus a conclusion provisionally accepted at one point in a dialogue may have to be reconsidered, or even retracted, at some later point, when new evidence has come in.

In typical legal cases, the plausibility of a story depends on how the whole story hangs together as a sequence of practical reasoning. If an agent's actions do not fit in with what we assume to be her goals, or if a sequence of actions runs contrary to what would be the normal script for the situation, the plausibility of the story will be undermined. The goals, the actions, the whole sequence of practical reasoning in the case, should all hang together in light of the script for the case (Bratman, 1987). Departures can be explained. But if appropriate critical questions are asked, they need to be answered.

Otherwise the plausibility of the story will be reduced. Actually, there are two levels of dialogue involved. At the first level, the agents who took part in the original case, at least according to the story, engage in deliberations on what to do. They not only act individually, but also are assumed to communicate with each other (Wooldridge and Jennings, 1995). They make choices, based on their goals and how they see the situation they find themselves in. At least, that is the assumption used to judge the plausibility of the story and to draw conclusions at the second level. At this second level, the story is listened to, read, or discussed by an agent or a group of agents who did not participate in the original deliberations at all. The purpose of this second set of agents is to examine the story and to extract information from it, or possibly even to have a critical discussion about whether this story is more plausible than some competing story. But how would such agents go about examining such a story? One method is to probe into the story exetastically, to try to see how well it explains the given facts of a case.

3.2. *Explaining Goal-Directed Actions*

Explaining goal-directed actions that have taken place in the past, in history or law, is based on understanding shared by the explainer and explainee. This kind of explanation works because the one agent (the explainer) has the capability to link the other agent's (the explainee's) goals with what the first agent takes to be the second agent's knowledge of the original situation. This capability is there because even though the situation of the historian may be quite different from that of the historical figure, they both share scripts concerning the way things normally occur. Even though we no longer use swords to fight battles, the historian can grasp what a sword is and how it works. When a soldier in the time of the crusades tells us how he used his sword to beat off an enemy attack, we can have a pretty good idea of what he is talking about. Even though we have never done this, we can imagine what it is like, to some extent. We certainly understand the soldier's goal of trying to defend himself, and how his actions were meant to fulfill that goal. Dray (1964) argued that explanation in history is based on understanding the actions of a human agent by reconstructing the thinking that presumably went on in the agent's mind at the time of his action. This type of explanation is based on a reconstruction of past events in which the explainer mentally reenacts the past action of the historical agent. Dray's theory of explanation in history was based on this key idea of reenactment in Collingwood's (1946, pp. 282–3) theory of history (Dray, 1995). In Collingwood's theory, the historian carries out an empathetic act of understanding the actions of another agent as part of a coherent story about the action as it supposedly took place in the past. In cognitive science, this act of understanding by shared vicarious experience is called *simulative reasoning* (Barnden, 1995). It is possible for one agent to understand a story in which another agent took part because the one agent can simulate the thinking of the other. The

most important kind of thinking shared by agents is practical reasoning. The story of a human action can be seen by one agent as a goal-directed account in which another agent faced a problem and took steps to solve it. The historian imagines himself as confronting the same problem that the past person saw himself or herself facing. He imagines the various alternative actions available and how the original agent would see these actions as solutions to his problem. According to Collingwood's theory, historical problems are problems of explaining human actions by understanding practical reasoning as used in the kinds of practical problems all of us are familiar with in our own experiences. According to Dray (1964, pp. 11–12), historical explanation is a mental process in which the explainer enters into and shares the presumed practical reasoning of the agent whose action is to be explained. The process is based on shared or empathetic understanding of practical reasoning used by an agent in mental reenactment of the problem-solving thinking of another agent. The historian probes into the story presented by the author or historical figure who has witnessed some event, such as a battle, or given some first-hand account of his own actions in the past. The lawyer, in examining a witness in court, uses the same technique. Both the historian and the lawyer test out the story by probing into it critically, using several different methods to evaluate its plausibility.

One method, as just noted, is to see how well the story hangs together. But there is also the method of anchored narratives. This method, as shown above, works by testing out the plausibility of the story against known facts in the case that can be established independent of the story. The method used is one of drawing conclusions from the story, by a process of logical reasoning, and then comparing these conclusions to known facts of the case. Suppose, for example, that given the script for the story and the explicitly stated set of propositions in it, a conclusion *A* can be drawn by logical reasoning. But then suppose that it is known from the facts of the case that *A* is false. Or suppose it can even be shown that *A* is self-contradictory. Then by the *reductio ad absurdum* type of reasoning, doubt can be cast on the plausibility of the story. It is this process of critical questioning of a story that serves as another method of evaluating the plausibility of the story and the claims made in it. In the given story, for example, let us suppose that it appears to be the case that the agent's goal is *G*. And suppose that the agent had an excellent opportunity to carry out *G* in a favorable situation, by bringing about *A*. But suppose that he did not bring about *A*. Why didn't he? If there seems to be no evident reason in the story, that would open the story to critical questioning. But then suppose that in response to critical questioning, the agent could explain quite plausibly why he did not bring about *A*. Then the plausibility of the story would be restored. But if he could give no such plausible explanation, the story would appear somewhat dubious. After all, if the agent was strongly motivated to bring about this kind of outcome, and had an excellent chance to do so, but then inexplicably passed it up, that

seems a little odd. It makes the story hang together less well as a plausible narrative.

In outline, then, the theory above explains the logical structure of how anchored narratives are evaluated as plausible or implausible. At the first level, a story is told in which a group of agents making choices are engaged in practical reasoning. At the second level, another group of agents examines the story and evaluates it as a plausible account of what supposedly took place. The agents at the first level were supposedly engaging in practical reasoning, as a basis for taking the actions they took. The agents at the second level, by an empathetic process of reenactment, try to make sense of what the agents were supposedly trying to do in the story. The method they use is to take the propositions given in the story, and then on the basis of the script, or common framework shared with the original agents, draw plausible conclusions based on practical reasoning. Using such a method of reasoning, they can test out the plausibility of the story. They can examine it by posing critical questions, by connecting the story together as a coherent whole, and by drawing implications from it and then testing these implications against other propositions that are also plausible or implausible.

4. Corroboration of Witness Testimony

By corroboration, as indicated in Chapter 1, we refer to the kind of case where one witness testifies to one proposition *A* as true and another witness testifies to the truth of either the same proposition *A* or some other proposition *B* that makes *A* more plausible. This simple definition applies only to two witnesses, representing the simplest kind of case, but it is also possible to have any number of witnesses involved, each of whose testimony corroborates those of the others. Although corroboration of witness testimony is a very common kind of evidence in law, it is a difficult and problematic notion to analyze logically. The following case (*McDonald v. Scott*, 1994 SLT 673), cited by McCannell (1996, p. 347), shows that corroboration is a tricky notion to define. In this case, the complainer gave evidence that she was kicked and punched while on the ground, while another witness said she was struck by a male arm while standing up. It looks as if these two reports should corroborate the claim that the complainer was assaulted. However, the assault conviction was quashed because the “evidence lacked the necessary conjunction of testimony” (McCannell, 1996, p. 347). Thus what is needed for corroboration in a criminal case is not just that two accounts positively support the charge against the accused. In this case, it could be argued that the two accounts disagreed. Somehow one account must fit with the other so that each supports the other.

If the accounts of two witnesses agree and fit together, they corroborate each other. However, if they agree too closely on all details, that may suggest collusion. Collusion suggests that both accounts are false. The latter

possibility indicates that corroboration must also have a negative counterpart in which an instance of testimony of one witness makes that of another less plausible. This could be called undermining or refutation of testimonial evidence, or perhaps negative corroboration of testimony by other testimony.

It is interesting to see that in Scots law, a confession will not be enough to prove guilt, and that corroboration of it is required. In a case (*Mitchell v. Maguire*, 1995 SLT 1277) cited by McCannell (1996, p. 347), an appellant confessed that he and another man had assaulted the complainer by pushing him from behind into the sea. However, the complainer testified that the appellant was standing in front of him at the time. The conviction was quashed because of failure of the confession to be corroborated, and indeed by its conflict with other testimony in the case.

The problem of analyzing corroboration has to be tackled first of all by examining the structure of the argumentation. First, an ambiguity has to be resolved between two types of cases. In the first, the structure of the argument from witness testimony is that of a convergent argument pattern. For example, premise *A* supports conclusion *C* and another premise *B* provides support for *C* that is independent of the support provided by *A*. Thus *C* is supported by two lines of argument, one from *A* and one from *B*, and each line of argument stands on its own, without having to depend on the other. For example, one witness testifies that she overheard the defendant conspiring to carry out the crime, and a second witness testifies that he saw the defendant leaving the crime scene. Each testimony provides evidence that the defendant committed the crime, but neither is connected with the other, or required to support the other as evidence. This structure of evidence could be called corroboration because they agree, and thus each supports the other and appears to make it more plausible. This structure of evidence cannot fully be investigated until Chapter 7, but we can say at this point that it presupposes a general theory of witness testimony based on scripts.

According to the theory of corroboration of witness testimony put forward here, the fitting together of two accounts, each of which is testimony from a different witness, can be very complex to judge in many cases. What is required is that the story or script given in the one account must fit together with the script given in the other. But what is fitting together? The parts of the one account not only must fit together with the parts of the other, but also each account must hang together with the other as a script. This fitting together is not just logical consistency of one proposition with another, or even of one set of propositions with another set. It is the holistic fitting together of the one story or account with the other. It is not just the component parts that must fit, or be consistent with each other. The whole structure of the one account, as a connected story that fits together holistically, must fit with that of the other. But what counts as such a fit?

There are two kinds of corroboration, one positive and the other negative. Positive corroboration means that the one account not only is consistent with, but also supports the other. This means that when you examine the one script, it provides details that not only are consistent with those of the other, but also amplifies details of the other and either helps to explain it as an account, or support parts of it by making them more plausible. Negative corroboration means that when you apply logical reasoning by reconstructing the one script, you come up with a conclusion that is the opposite of a conclusion that can be drawn by logical reasoning from the other script. Or it means that you come up with a conclusion in the one script that casts doubt on a conclusion of the other. How do you apply logical reasoning to make such determinations? According to the theory put forward here, you do it with the implications that can be drawn from a script using argumentation schemes. You take the given account as a whole, and then you fill in gaps in it. These gaps need to be filled by drawing implicit conclusions using argumentation schemes. Part of this process requires filling in missing premises and conclusions. This process is a complex one, and it needs all the resources of the theory of witness examination developed in this book. It cannot just be carried out by using the traditional notion of logical consistency between a pair of propositions, abstracted from the context of the script in which they are embedded.

4.1. *Attacking the Plausibility of a Story*

A main strategy of legal cross-examination is to attack the plausibility of the story told by the witness through a technique of asking questions that probe the weak spots in this story. Numerous cases of this sort are presented in Bodin (1967). In one case (p. 39), the cross-examination showed the implausibility of the plaintiff's claim that the defendant owed him money by eliciting facts about the plaintiff's conduct. These facts were that the plaintiff had failed to make demands for payment of the supposed debt. The inference drawn was that the plaintiff knew his claim was unjust and that he knew he would be rejected if he made a claim for payment. The basis for this attack lies in the premise supplied by the following plausible conditional: if one party owes a second party money then normally, when payment is due, the second party will make demand for payment. Whether this conditional is applicable to a case depends on the circumstances of the case. But in this case, the circumstances were such that it would be reasonable to assume that the second party would have made a demand for payment. But then the second premise is that, according to the known facts of the case, the second party did not make a demand for payment. Therefore, by a process of logical reasoning from these two premises, the conclusion can be inferred that the first party did not really owe the second party the money as claimed. In other words, the known facts suggest by implicature that the plaintiff's story is not consistent with the kind of conduct one would

normally expect in a case like this. So unless the plaintiff can give some believable explanation of his failure to take action, the plausibility of his story as a whole is weakened. This case illustrates the method of testing the plausibility of a story by examining its coherence as a narrative to explain a set of deliberations that supposedly took place. What is crucial is whether the plaintiff's actions fitted in with the account he gave. From the account, plausible reasoning can indicate what the agent's goal would plausibly be. But if his actual actions (or lack of them) do not fit with such goals in a structure of practical reasoning, that opens his story to critical questioning. Unless the questions can be answered appropriately, the plausibility of the story is weakened. The method used here is to attack the coherence of the story as a rationally connected sequence of goals and actions.

The other method of attacking the plausibility of a story is to test the story out against facts that can be established as true independent of the story. This technique is illustrated in a case presented in Bodin (1967, pp. 65–70) in which a man testified that he had attended a conference in Boston on a particular date. He testified that he went there by train. This claim was central to his story. The attorney had carefully collected many details about train schedules and other facts relevant to the supposed trip. In court, he first asked a series of questions to the witness, so that the witness committed himself to many details of the supposed trip. Then the attorney presented known facts that were inconsistent with the detailed answers given by the witness. The witness then changed key dates in his story. But the attorney was able to show, by asking further questions, that the new story did not fit with certain other known facts of the case. In this case, the cross examination went into many details as a basis for fixing the date of travel. As soon as the story presented by the witness was shown to conflict with these known facts, the plausibility of the story was weakened. In this case, the method used is that of anchored narratives. The testing out of the story depends on its anchoring on evidence that can be verified through the collection of facts independent of the story. If these facts can be established as true, beyond reasonable doubt, what happens if the story conflicts with them? The outcome is that the plausibility of the story is undermined.

4.2. *The Process of Examining a Story*

Much of the process of making sense of a story in legal examination of witness testimony comes from the process of trying to get an explanation of the presumed facts in a given case. This process is possible because the examiner and the trier share a common understanding of the way things normally go in a situation. AI researchers such as Cawsey (1992) and Moore (1995) have advocated taking a pragmatic and dialectical approach to explanation.³ This

³ The analysis of abduction given by Josephson and Josephson (1994) could also be cited here as having a pragmatic aspect.

work has shown how explanations of human actions are successful because they are understood in relation to a background story or so-called script. Cawsey (1992) and Moore (1995) convincingly demonstrated the worth of this approach to explanation by studying transcripts in which one person was attempting to explain to another person how an electronic circuit or piece of computing equipment worked. In these cases, the speaker and the hearer had a dialogue in which one party asked questions and the other offered explanations. This dialogue approach to explanation by Cawsey and Moore is quite comparable to the question–answer theory of explanation advocated by Collingwood. Both advocate a pragmatic and dialectical way of looking at explanation as based on shared understanding.

But the process of examining a story is not just one of piecing together the presumed facts of the case, or one of trying to explain the facts. It is also one of critical probing into the story and testing it out critically. The whole apparatus of argumentation theory is necessary and useful for this purpose. As Twining (1999, p. 354) has pointed out, story telling can be quite dangerous in legal argumentation and can use irrational means of persuasion to achieve prejudicial effects in court. Twining (1999, p. 354) has listed ten prominent examples of such dangers: (1) sneaking in irrelevant facts, (2) sneaking in invented facts, (3) suggesting facts by innuendo, (4) focusing attention on the actor rather than the act, (5) appealing to prejudices and stereotypes, (6) telling the story in emotionally toned language, (7) telling an irrelevant story to win sympathy, (8) making use of dubious analogies, (9) subverting the distinction between fact and law, and (10) good stories pushing out true stories. Several of the items on this list of dangers of story telling in court correspond to traditional informal fallacies. For example, (1) and (7) relate to relevance and to the fallacy of irrelevant conclusion (*ignoratio elenchi*). Example (4) relates to the *ad hominem* fallacy, example (7) relates to the appeal to pity (*argumentum ad misericordiam*), example (8) relates to the fallacy of misleading analogy, and example (5) relates to the fallacy of hasty generalization (*secundum quid*). Other items on the list also relate to kinds of arguments and criticisms studied in argumentation theory. Thus it is clear that many different kinds of arguments or argumentation schemes are needed to critically examine a story. As Twining emphasized (p. 353), generalizations based on common knowledge can be extremely useful in helping a trier to understand the account given by a witness, but they can also give illegitimate or fallacious reasons for accepting conclusions based on inference.

These remarks suggest that the method of evaluating corroboration of witness testimony and other kinds of evidence proposed in Chapter 2 may not be the only approach. That method was to see the new argument boosting the plausibility value of one or more of the premises of the old one. But the remarks above (in Section 4 of Chapter 3) suggest that corroboration of

testimony cannot just be carried out by using the traditional notion of logical consistency between a pair of propositions, abstracted from the context of the script in which they are embedded. According to these remarks, corroboration can only be evaluated by extracting implications that can be drawn from a script using argumentation schemes, taking the account as a whole, and finding gaps in it by asking the appropriate critical questions. Thus there is another way a secondary argument could be seen as corroborating the initial one by increasing or decreasing its plausibility value. It is that the new argument proactively rebuts a possible attack on the old argument by answering a critical question. On this new theory, which could be called the critical questioning theory, one argument from witness testimony corroborates another by answering a critical question in the argumentation scheme for argument from witness testimony fitting the details of the first argument in the given case. To use this second theory as an evaluation method, however, seeing an argument as a set of propositions on an argument diagram is not enough. We have to see an argument as a dialogue between two parties, in which one asks critical questions in a peirastic dialogue that probes into the account given by the other. It is a dialogue that will have two sides, the pro and the contra, concerning some central issue that is being disputed.

5. The Whole Truth

Even once a story has been filled out, has been critically assessed in a peirastic dialogue, and appears highly plausible, the case should not be closed. There is always the possibility that new relevant information may come in. For example, a competing story by another witness may come to be told. Or it may be found out that the original witness who told the plausible story had been bribed. The method of anchored narratives is only one part of the argumentation that provides the evidence used in a trial. The trial is based not only on the evidence elicited by the examination of witnesses in the court, but also on the evidence collected before the trial began. The assumption is that enough evidence has been collected to make the trial go ahead so that the issue will be resolved. But if that evidence is incomplete, the whole process will be affected. The prosecution and the defense are supposed to share that evidence. But, once again, if that assumption is not met, the whole trial process may be subverted.

The following case outline is quoted from Armstrong and Possley (1999, p. 12).

The Walter McMillan Case

Monroeville, Alabama – Even with seven alibi witnesses, McMillan was convicted of murder. To assure McMillan's appellate lawyer that they weren't hiding anything,

prosecutors gave him taped conversations of a key witness implicating McMillan. But when McMillan's lawyer played the tapes' flip side, he heard the same witness complaining of being pressured to frame McMillan. An appeals court concluded that prosecutors had suppressed evidence, and McMillan's conviction was reversed in 1993.

In this case, the witness may have presented a story that appeared plausible to the jury, which found it sufficient evidence to convict McMillan. But once the new evidence from the flip side of the tape was introduced in the appeals court, that conviction was reversed. The problem in this case was not with the plausibility of the story produced by the witness when he was examined in court. The problem arose at an earlier stage, when the prosecution failed to share information that was vitally important. Once this information was made known to the court, the plausibility of the witness's story was reduced, because he was shown to have a bias.

The problem in this case was that the jury did not know the whole truth of the matter. Once the new information was made evident, their estimate of the plausibility of the witness's story changed. This re-evaluation, in turn, affected the whole body of evidence in the case, overturning the earlier conviction. What is shown is that plausibility of testimony should be seen as relative to the information given in the case. As new relevant information comes in, the judgment of the plausibility of testimony may be adjusted upward or downward. The assumption in a trial is that all the relevant evidence, or enough to properly decide the case, has already been collected and distributed to both sides at the beginning of the trial. As the trial proceeds, and witnesses are examined, that information will be expanded and its plausibility reassessed by the process of peirastic examination. But if the data base is insufficient to begin with, the whole sequence of argumentation in the trial may go in a wrong direction and fail to reach its goal.

The problem in this case arose not at the stage of the trial where the witnesses were being examined. It arose at a prior stage in the process where the information that the trial is supposedly based on was collected and made available to the attorneys on both sides. The prosecutors suppressed evidence that would have been very important in the argumentation stage of the trial, had it been revealed at that stage. But it did not come out in the trial because it was not known to the defense at that stage. The problem was the failure to collect and distribute information properly, even before the trial began, with the result that the argumentation in the trial was based on premises that were lacking in the proper information.

5.1. *Competing Stories*

A much simpler case can be used to illustrate how new information comes in during a trial that prompts a different story. Consider once again the

example dialogue from Chapter 2, Section 1. The proponent begins by making a claim, and then supports the claim with an argument, citing the fingerprints found on the knife.

The Fingerprints on the Knife Dialogue

Proponent: I claim that John is guilty of murder.

Respondent: I deny your claim.

Proponent: John's fingerprints were on the knife.

Respondent: Witness X says that John pulled the knife out of the dead body, and this shows why his fingerprints were on the knife.

Proponent: This testimony is inadmissible, since she is anonymous.

There are a number of implicit premises assumed in this argument. The conditional is assumed that if John's fingerprints were on the knife then that is evidence that he grasped the knife, using it to commit the murder. This conditional is plausible because it is common knowledge that the normal way of killing someone with a knife is for the perpetrator to hold the knife in his hand, grasping it and using it to stab the victim. Once you start to analyze the argument and fill in the missing assumptions it depends on, the whole account hangs together as an explanation of the facts collected to the point of the third move in the dialogue.

At the fourth move in the dialogue, the respondent brings forward a counterargument that rebuts the proponent's prior argument. Using an appeal to witness testimony, he argues that there is a reason to think that John did not commit the murder. There are a number of implicit assumptions that act as unstated premises in this argument. Many of them can be elicited by using the argumentation scheme for appeal to witness testimony stated in Chapter 1. For example, it is assumed that the witness was in a position to know about the events that took place at the crime scene during the time the crime was committed. The respondent's counterargument presents a story, or account of what happened, that is an alternative to the original story offered by the proponent. This second account could be even more plausible than the first one, depending on how the appeal to witness testimony was put forward and supported as an argument. This very common type of case of bringing forward evidence in a trial illustrates how first one argument, and then a second one put forward to rebut it, can both be seen as explanations offered to account for the facts. At first, one explanation seemed plausible as an account of the facts. But as new facts came into the trial, a competing explanation was put forward as a plausible account. The trier then had to choose between the two arguments by deciding which was the stronger. The problem is to decide which argument provides the better explanation of the facts.

6. Nonexplicit Assumptions in a Story

Once a story is laid out, the problem is how inferences are drawn from it to fill in the missing bits and then use the whole derived script to draw conclusions from the story, when the story is used as evidence for something. Basically, as shown by the fingerprints on the knife dialogue, how the process works is by inference to the best explanation. When the story is given as a text of discourse, the missing bits can be filled in by making hypotheses that can be used to explain what presumably took place. In any given instance, several explanations of what happened may be possible. The problem is to pick out the most plausible one, judging from the context. The solution is that the most plausible assumption fills in the best explanation of what happened, given the particulars of the story and what we know (as script) about what normally happens in this type of case. Since the witness presumably was in a position to know the real facts of the case by first-hand knowledge of them, her account should not only hang together and be consistent with the other known facts of the case. It should also be plausible, meaning that things in the account should happen in more or less the same kind of way that we all know that they generally happen. If something in the account given by the witness seems to be out of line with the way things normally happen, we require some explanation of why the case was so unusual.

Once the story is filled out, and the missing bits are filled in as plausible assumptions to best explain what happened, then the story has yielded more information. Of course, this secondary information was not explicitly asserted in the story – that is, in the actual text of the story. It is derived from that text by inference. Once a story has been presented, and conclusions have been drawn about the missing parts required to make sense of the story, the story can be judged by a hearer. Is it plausible or not? A good deal of the judgment of the plausibility of the story will rest on how the missing bits have been filled in. If we look at witness testimony from a point of view of how it should function as evidence in a trial, it is important to keep in mind that the trier will decide on the probative value of the evidence that comes out in the case. A lot depends on how plausible the testimony of a witness looks to the trier. The witness may in fact be telling the truth about something she knows, but that may not matter much if her testimony does not appear plausible to the jury. For this purpose, the testimony of the witness must look to the jury as though it is describing a real event, or some matter that really is true. It will help a lot if the way things went, according to the testimony, follows the usual pattern of the way things normally go in the everyday experiences of the jury in similar situations.

According to Pennington and Hastie (1991, p. 524), the missing bits of a story are filled in by inference chains and converging lines of reasoning that rely on what they call “world knowledge” and “similar situations”. In

their account of how jurors arrive at a decision in a typical criminal case, they give the following example. Suppose the case concerns the actions of two men, Johnson and Caldwell, and part of the reasoning used in the case involves the following four propositions.

- P1: A person who is big and known to be a troublemaker causes people to be afraid.
- P2: Caldwell was big.
- P3: Caldwell was known to be a troublemaker.
- C: Johnson was afraid.

In their example, Pennington and Hastie say that P2 was part of the evidence in the case and was therefore known by the jury (p. 524). And P3 is said to be a previous inferential conclusion drawn by the jury on the basis of other evidence in the trial. The jury then use what Pennington and Hastie call their “world knowledge” to insert the nonexplicit premise P1 as a plausible assumption.⁴ Finally, the jury draw conclusion C based on their “world knowledge about the consequences of being confronted with such a person” (p. 524). The fact that Pennington and Hastie used this particular example will turn out to be quite interesting in light of the theory of plausible reasoning put forth in the [next chapter](#).⁵ The example shows very well how the inferences that make up the evidence in the case are of a plausible and defeasible kind.

6.1. *Use of an Argumentation Scheme*

Another point to be made here is that unstated assumptions are extremely important in the evaluation of witness testimony, not only in filling out gaps in the story, but also in evaluating the appeal itself as evidence. A kind of case studied by Prakken (1991, p. 4) shows how appeal to witness testimony typically rests on unstated assumptions that are part of the argument. In this case, the plaintiff claimed that a contract exists between him and the defendant, because the plaintiff had offered to the defendant to sell her car to him, and she had accepted the offer. The plaintiff has the burden of proof in such a case. Prakken (p. 4) asks us to suppose that the plaintiff tries to prove his case using the following appeal to witness testimony (paraphrasing Prakken’s statement of the argument).

- Witnesses John and Bill say there was an offer and acceptance.
- So there was an offer and acceptance.
- If there was an offer and acceptance, then a valid contract was created.
- Therefore there was a valid contract to sell the car.

⁴ It has also been called ‘common knowledge’ in legal reasoning (Walton and Macagno, 2005).

⁵ In Chapter 2, Section 2, the classic case of plausible reasoning in the ancient world (the eikotic argument) has already revealed a good deal about how plausible reasoning works in the Caldwell and Johnson case.

This appeal to witness testimony could be quite a reasonable argument. It is a chain of argumentation containing two subarguments. As Prakken indicated (p. 4), there is an implicit premise in the first subargument: if reliable witnesses say that something happened, then it happened. This way of exhibiting the structure of the inference shows that it has a kind of *modus ponens* structure, suggesting that appeal to witness testimony could generally be seen as having this form. Consider once again the argumentation scheme for appeal to witness testimony in Chapter 1, Section 4.

Argument from Witness Testimony

Position to Know Premise: Witness *W* is in a position to know whether *A* is true or not.

Truth-Telling Premise: Witness *W* is telling the truth (as *W* knows it).

Statement Premise: Witness *W* states that *A* is true (false).

Generalization: If a witness *W* is in a position to know whether *A* is true or not, and *W* is telling the truth (as *W* knows it), and *W* states that *A* is true (false), then *A* is true (false).

Conclusion: Therefore (defeasibly) *A* is true (false).

All four premises can be taken as expressing unstated assumptions on which the plaintiff's argument rests. They cite four assumptions implicit in the appeal to witness testimony that could be called into question in this particular case.

Suppose the defendant wanted to attack the argument, using the claim that John and Bill had lied before. This counterargument relies on the unstated assumption that if a person lied before, he or she is an unreliable witness (Prakken, 1991, p. 4). This case is essentially that represented as argument 3 in Chapter 1. The defeater to the effect that the witness is unreliable is introduced. But this defeater argument too, as Prakken indicated, depends on an implicit assumption. What is shown then is that the argumentation scheme can be used as a tool to draw out missing premises in an argument. So it is not only "world knowledge" that is the basis for drawing out nonexplicit assumptions in examination of witness testimony. The argumentation scheme can be used to pinpoint key premises on which the argument depends and that can be questioned or attacked by the opposed side. Similarly, in many cases of legal argumentation, nonexplicit assumptions in the argument can be revealed by using the argumentation scheme for practical reasoning.

7. Using Conclusions Drawn from the Story

Once the story has been presented, and the missing parts of it have, at least to some extent, been filled in, other conclusions may also be drawn from

the expanded information. For example, suppose we are interested in the story of the theft of some money because we want to try to determine who stole the money. First of all, we get a story,⁶ say from a witness who was in the area when the money was presumably stolen. The witness tells her story. Then we try to make sense of the story by filling in the missing bits. If the witness is present, she may even be asked whether these assumptions are correct, in her opinion. Then we get an expanded version of the story. Then we could evaluate the story perirastically by testing it in various ways – for example, if the story appears to be inconsistent or implausible at some points, we could study those aspects of it. Perhaps we could even ask the witness about them, if that is possible, or felt to be helpful at this point.

7.1. *Assembling the Evidence*

Now we get to yet another stage of drawing inferences from the story. When we get to the point when the question is asked ‘Who stole the money’ we will have to assemble the evidence drawn from the story at that point and then try to use it to test various hypotheses in the form of guesses. For example, suppose that Bob was in the area where the money was stolen at the time, and that Bob had no alibi. Depending on the story, Bob may become a so-called suspect, if the story seems to point to him. Then the hypothesis ‘Bob stole the money’ can be judged alongside other possible explanations of what happened to the money. Perhaps, for example, Ed was in the area too, and he did not have an alibi either. Now there are two possible explanations of what happened to the money. Which is the better explanation? To decide this question, we have to go back to the story and see which explanation best fits in with it. More information may come in. We may check the credit of Bob and Ed, and find that Bob has very good credit, while Ed is heavily in debt with several Nevada casinos. Given this new inference, the conclusion that Ed took the money becomes more plausible, other things being equal. The reason: Ed had a strong motive for taking the money. But suppose that there is also some information that suggests that Bob may be the culprit. Suppose that Bob had the combination to the safe containing the money, but Ed did not. Then there is a reason for judging Bob to continue to be a suspect. Bob had opportunity, of a kind that Ed apparently lacked.

At this point, it is good to step back and look at the argumentation in the case. There is a body of evidence on both sides. There are reasons for suspecting that Bob did it and reasons for suspecting that Ed did it. What

⁶ We have followed the terminology in the literature by using the term ‘story’. But this term suggests a narrative, while in many cases, the account given may be causal, or it could be a scientific account, for example. An account can be any related and presumably consistent set of statements that is used to answer a question about why or how something took place. Thus we would prefer to use the term ‘account’. An account is a set of statements offered by a proponent of it to attempt to explain something questioned by a respondent in a dialogue. Thus, in this approach, an account does not always have to be a narrative.

typically happens now in such a case is that there is a dialectical shift from the information-seeking dialogue to a critical discussion. The reason is that we now have two theses. One is that Bob took the money and the other is that Ed took the money. Presumably, the one thesis is the opposite (negation) of the other. That is, the assumption is that one man took the money if and only if the other did not. That is, we assume that the culprit acted alone, and we are not considering the hypothesis that Bob and Ed acted in collaboration with each other to take the money. In other words, we now have two opposed theses, and the goal of the dialogue is to try to determine by rational argumentation which thesis is true, or can be proved to be true from the given data. In short, the dialogue has become, at this point, a critical discussion.

What has happened is that the information derived from the initial story is being used as a basis to draw inferences that are used as arguments on one side or the other of a critical discussion. Whether the conclusions drawn are plausible now needs to be judged from the standpoint of a critical discussion. It is precisely this sort of shift that is typical of the argumentation used in a trial. First, the information is extracted from the witnesses in examination dialogue. And then this information is used by the attorneys to make their arguments to try to persuade the trier. But the trier can make up its own mind who to believe and what conclusions to draw. The trier can judge not only the plausibility of the story presented by a witness, but also what conclusions to draw with respect to the ultimate issue of the case. To see what is going on here, you have to look at the sequence of argumentation in the trial as whole, and especially the dialectical shift that takes place between information-seeking dialogue and critical discussion.

The key to grasping how witness testimony is tested by an examination is the notion of plausibility. A story that hangs together, both internally and with any externally known facts, is said to be plausible. And it is plausible witness testimony that furnishes most of the probatively relevant kind of evidence sought after in trial. But plausibility is also the guide to common argumentation in everyday life. That is the reason a jury can decide which side in a trial has the better case. Plausible reasoning is common in many everyday cases of argumentation where conclusions are drawn on the basis of evidence, and not just in trials or in other cases of legal argumentation. Surely then this notion of the plausible story, or connected and testable account of some incident told by one person to another, is central to understanding how argumentation works in peirastic dialogue. And this type of argumentation is central to information-seeking dialogue generally. In this kind of dialogue generally, the questioner does not just ask questions at random. A good question is one that is used to elicit relevant information in the dialogue, or that is used to peirastically probe into that information to test it. What connects the questioning together in sequences of argumentation in profiles of dialogue is precisely this testing of the account presented by the

witness as plausible or implausible. What is presumed is some underlying notion of plausible inference. The study of this type of inference, as a type in its own right, separate from deductive and inductive types of inference, is carried forward in Chapter 7. But before going on to that, there is a lingering problem concerning scripts and stories that needs to be addressed.

8. Enthymemes

In a typical case, such as the case of Bob and Ed above, or in a legal case of a trial, it is important not only to see that the context of use of the argumentation is very important, but also to recognize that there is a chaining of inferences making a long chain of reasoning that may run right over dialectical shifts. In other words, the chain of reasoning may continue right through the shift. Part of what makes up the chain of reasoning is so-called missing premises and conclusions that are inserted as assumptions based on best explanations of what happened in the case. What is meant by saying that such a premise or conclusion is ‘missing’ is that it has not been explicitly stated in the text of discourse. Even so, it may be inferred that the author of the text was relying on it, or including it, as part of the line of argument. An argument that has such a missing premise or conclusion is called an enthymeme. The classic example is the following inference: all men are mortal; therefore Socrates is mortal. In this case, the argument becomes deductively valid, once the missing premise, ‘Socrates is a man’, has been filled in.

Many enthymemes are not deductively valid inferences, even when the missing parts have been filled in. For example, it is quite common for enthymemes to be based on practical reasoning. Consider the following case from Pinto, Blair and Parr (1993, p. 143).

Everyone should learn self-hypnosis because it’s one of the best ways to reduce stress.

This argument rests on the missing premise that reducing stress is a worthwhile goal for everyone. Once this goal has been stated, it can be seen how the argument is an instance of practical reasoning. The explicit premise of the argument is that self-hypnosis is a means to reduce stress – one of the best ways. The conclusion given is that everyone should learn self-hypnosis. The practical reasoning combines the goal with the means for carrying out that goal. The conclusion is the statement that if you want to achieve this goal, you should carry out the recommended action.

But filling in used assumptions in enthymemes is a notoriously difficult logical problem, because it depends so much on an interpretation of what a speaker probably or plausibly meant to say in a given case. There is always the danger of the straw man fallacy – the tactic of attributing as a premise or conclusion of a speaker’s argument a proposition that exaggerates or

distorts the argument in order to make it easier to refute. But there are some ways of trying to avoid this fallacy. According to the analysis of enthymemes given in Walton (1996, Chapter 7), there are six known bases for filling in assumptions used in enthymemes: (1) common knowledge shared by the speaker and reader (or audience); (2) the known position of the speaker on the issue; (3) custom, habit, or normal ways of doing something; (4) conceptual links holding an argument together; (5) assumptions of practical reasoning in ways of carrying out actions; and (6) innuendo, based on conversational implicature. The sixth basis for the enthymeme is often the most problematic to fill in with any kind of assurance, because it depends so much on the context, and is so much subject to uncertainty and controversy. But there is a dialogue-based technique for the task.

8.1. *Use of Gricean Implicature*

The best technique of examining a witness exploits Gricean implicature by crafting the question not just in relation to the commitments of the respondent, but in relation to what the jury will find plausible.⁷ This technique is to break down the whole sequence of questioning into a series of steps. Each single question in the sequence has a plausible answer – one that will seem plausible to the jury based on their common knowledge and expectations. Then at the end of the sequence, once all the plausible answers are set out together, a conclusion follows from them by Gricean implicature. An example that can be used to illustrate this technique has been given by Fine (1994), in connection with a case where a woman claimed that worry and stress caused by her termination from her job gave her an ulcer. The company's physician claimed that the ulcer was not due to the job termination. The cross-examiner then put the following sequence of questions to this physician.

Q: Doctor, when do the medical records in this case reveal that Mrs. Jones' ulcer was first diagnosed?

A: June 1992.

Q: Was that before or after she was fired in September of 1991?

A: After.

Q: Doctor, can stress cause an ulcer?

A: Yes.

Q: Doctor, can tension cause an ulcer?

A: Yes.

Q: Doctor, can worry over the loss of a job cause an ulcer?

A: Yes.

⁷ Callen (2001) has shown how over-reliance on formal logic tends to produce an unrealistic model of how evidence is drawn from witness testimony in the context of an investigation or trial. He used the example of Othello to show how Gricean communication principles are used by fact-finders to draw inferences based on interpreting what someone has said.

Note that these questions are not leading questions. They appear to be factual kinds of questions. Given the facts of the case, and common medical knowledge, the answers to all of the questions seem obvious. The jury, presumably, already knows the answers to these questions. Thus any response by the witness other than a 'yes' would be regarded as implausible by the jury. Of course, the example is a bit dated. Now it is widely known that ulcers are mainly caused by a bacterium and not by stress. But even so, the example illustrates a successful questioning strategy at work. Why does it work? The answer is twofold. One part is that the yes answers seem so plausible to the jury that any other answers would not be believable. As Fine (1994, p. 26) puts it, "The witness must either answer as the jury expects or risk being disbelieved." The other part of the strategy is that once all the answers are in place, the jury's plausible expectations about the way things normally work will lead them to put all the answers together and draw a conclusion. They will draw the conclusion that the ulcer was caused by the termination. How do they draw this conclusion? They do not draw it by deductive logic. They draw it by a process of plausible reasoning. No other explanation of the ulcer has been indicated. The job termination is the only one mentioned. And the series of questions has indicated that job termination can cause stress, which in turn can cause ulcers. The jury will put two and two together, and draw the obvious conclusion. Fine (1994, p. 26) added that, to clinch the case, the cross-examiner can ask a leading question that sums up the whole sequence: "Doctor, we've established that worry and stress in general, and worry and stress over the loss of a job in particular, can cause an ulcer. We've also established that Ms. Jones' ulcer was diagnosed after she was fired. It is clear, therefore, that Ms. Jones worry and stress as a result of her being fired contributed to causing her ulcer?" But the beautiful thing about this strategy is that it is not really necessary to even ask this final leading question. The jury will draw the conclusion without the examiner even stating it, or posing it as an explicit question.

The beautiful part of this argumentation strategy lies in how it is crafted. Each question leaves the witness no room for evasion. The jury already accepts the affirmative answers as plausible, based on the facts of the case and their common knowledge about how things can be expected to go in their experience. If the witness answers otherwise, his credibility in the eyes of the jury is thrown into doubt. The witness is not left much choice. But then once the answers are in, Gricean implicature clicks in. The conclusion the examiner wants the jury to accept is automatically generated, whether it is explicitly stated or not. The whole sequence works without the necessity of asking leading questions or other kinds of questions that might be open to objection or argument.

The whole process is made up of four stages. The first stage is the presentation of the story, or account of some alleged occurrence. The second stage is the filling in of the gaps in the story, using the notion of a script. The third

stage is the peirastic examination of the story, using the method of anchored narratives to test out and critically examine the weak points in the story. As noted in Chapter 4, both second and third steps involve an expansion of the information contained in the story. But then there is a fourth stage as well. We may be interested in having a critical discussion, a deliberation, or some other type of dialogue, using the information derived from the story. For this purpose, further plausible inferences from the expanded story will need to be drawn. This last stage is based on the shift from information-seeking dialogue to some other type of dialogue, such as a deliberation or critical discussion.

8.2. *Use of Common Knowledge*

In other cases, filling in missing assumptions in an argument is less difficult, and less dependent on Gricean assumptions about conversation policies. The following example of an argument, an exercise in a logic textbook (Copi, 1986, p. 246), can be used to illustrate how to analyze an enthymeme of this simpler kind. The exercise is to find the missing assumptions that are part of the argument represented as follows.

Although these textbooks purport to be a universal guide to learning of great worth and importance – there is a single clue that points to another direction. In the six years I taught in city and country schools, no one ever stole a textbook (W. Ron Jones, *Changing Education*, Vol. 5, No. 4, Winter-Spring 1974).

There are three statements that are plausible as missing premises in the argument in this example.

1. Anything that is a universal guide to learning of great worth and importance would be regarded as highly valuable.
2. Anything that is regarded as highly valuable, and would not be too difficult to steal, would likely be stolen.
3. These textbooks would not be too difficult to steal.

The argumentation evidently expressed in the text of discourse above can be extracted by asking the following question. Since no one ever stole a textbook, in the writer's experience, what follows from missing premises 1, 2, and 3 above, along with the explicitly stated premises? The conclusion that follows is that it is false that these textbooks are regarded as highly valuable. The line of argument having been followed to that point, the final conclusion can be drawn that these textbooks are not really a universal guide to learning of great worth and importance. How is this line of argument reconstructed from the original text of discourse? The task is made possible by our common understanding of the way things normally work. The three missing premises are statements the arguer can expect the reader to take for granted about the way people can reasonably be expected to act. Statement 1

is a general assumption about human values. Statement 2 is about normal human behavior that one might expect. Statement 3 is based on common knowledge about textbooks and on how stealing is normally done. All three statements are based on scripts, or familiar ways of doing things in common human experience. We all know from our own experiences how textbooks are used in schools, for example. We know that they are not large objects, and can easily be transported, concealed, and stolen. Because the school textbook script is familiar to all of us, it is not difficult for us to fill in the three missing premises above and thereby reconstruct the argument in Copi's example.

Basically the same skills are used by a jury when analyzing argumentation in a court of law. The examiner can assume that the jury knows what they know about the way things normally or generally go in familiar kinds of situations. As Twining commented, these unstated assumptions often take the form of generalizations. These generalizations are often plausible assumptions about the way things normally go in a script. But as Twining pointed out, they can sometimes be misleading, and even prejudicial and fallacious.

8.3. *Probing to Reveal Unstated Assumptions*

There is a problem with judging the missing parts of an enthymeme, indicated by Burke (1985), Gough and Tindale (1985), and Hitchcock (1985). If the respondent to an argument is given *carte blanche* to fill in any assumption needed to make the argument structurally correct, she may be adding premises and conclusions that were not really meant by the arguer, or that might even be rejected by the arguer. To contend with this problem, the first step is to make an important distinction between needed and used assumptions (Ennis, 1982, pp. 63–6). Needed assumptions in an argument are propositions that meet two requirements. First, the argument is not structurally correct as explicitly stated. But second, the argument becomes structurally correct as an inference once the needed assumptions are inserted into the right gaps. Used assumptions are missing propositions that are meant to be part of the argument by the arguer (author of the text). It is not possible to solve the problem of enthymemes in this chapter. The best that can be done is to link it as a logical method with appeal to witness testimony and with the testing of witness testimony using scripts and anchors. Through the use of these tools, it can be seen that there are objective methods that can be applied to test witness testimony as a form of plausible and defeasible argumentation.

For example, in witness examination, much depends on unstated assumptions in arguments. An important part of the process of peirastic dialogue is the probing by the examiner into the unstated assumptions in the argumentation of a witness giving testimony. Centrally important in this process are the kinds of questions used by the examiner and the sequence in which

one question follows another. Underlying this questioning is a set of scripts shared not only by the questioner and respondent, but also by the trier. In Chapter 3, Section 3, a distinction was drawn between closed or choice questions that limit the answers of a respondent and open or search questions that allow a respondent broad latitude in answering. These two types of questions represent different styles of trying to extract information from a witness. One approach, characteristic of questioning style in the Anglo-American system, is to use a lengthy series of choice questions. This style controls the options of the respondent. The other style is to ask a search question that invites the witness to tell the story on his own terms. Then once the story has been told, in the form of an initial account, probing follow-up questions can be used by the questioner to fill in the gaps in the story by asking for clarification of items that were not explicitly expressed in the initial account.

Another factor important for gaining a proper appreciation of the worth of witness testimony as a form of argument is the notion of relevance. Such an argument is worth something as evidence when the context is that of, for example, a murder investigation. In such a case, hard evidence may be difficult to find. And therefore an appeal to witness testimony, despite its weak and fallible nature, can be relevant. To say an argument is relevant means that it has probative weight within a chain of argumentation moving toward an ultimate conclusion at issue. Each single small argument in the sequence may represent only a small piece of evidence, where it seems like a weak and fallible argument. Even so, it can have an important place in the larger mass of evidence in a case. What has been shown is that witness testimony is a defeasible kind of argumentation that needs to be tested out in sequences of connected moves that have an order and a logical form within that sequence. The hypothesis now advanced is that this kind of argumentation needs to be evaluated in the context of a question–reply sequence taking the form of a dialogue between the proponent of the argument and a questioner. The next step is to see how an appeal to witness testimony can be structured as a defeasible form of argument that fits into various goal-directed and regulated kinds of dialectical frameworks. In such a framework, the examiner of the witness must ask questions, and in many instances must probe critically into the answers given. What is produced is a sequence of argumentation in a dialogue format, as every judge and lawyer knows empirically. But this dialogue format of question and answer can also be used as the basis for a normative model for evaluating an actual performance of witness examination in a trial. The underlying purpose of the trial is to lead to a decision based on the evidence elicited through this performance of questioning and replying in the examination process. The trier is an observer of this performance and must draw his or her own conclusions, based on what can be inferred from the given dialogue exchange. It will be argued in this

book that the proper drawing of such conclusions presumes a normative model in which information is passed from the witness into the court and then processed and evaluated through the examination process that then takes place. Of course, each case is unique, and it needs to be appreciated that legal argumentation is fallible. Arguments based on witness testimony can default for all kinds of reasons, many of which cannot be anticipated in advance. Such arguments are deeply defeasible. But it has been shown above that the argumentation schemes for appeal to witness testimony are useful for eliciting the right kinds of questions, which are appropriate for the most common and typical kinds of cases encountered in legal and other contexts of argumentation. The larger problem now posed is how to provide an overarching normative framework for these argumentation schemes that can be used as a logical structure for evaluating witness testimony in legal argumentation.

9. Plausible Reasoning as a Tool for Testing Testimony

Standard argumentation theory tends to think of the process of filling in missing premises in an argument in a simple context where a critic or analyst is trying to interpret an argument in a given text of discourse. Essentially only two parties are directly involved. The legal context of examining witness testimony is much more complex. There are layers representing both sides of a case, but they are putting forward argument designed to persuade a third party.

9.1. *The Adversarial Context of Legal Examination*

If you adopt the view that the trial is supposed to have the twin aims of justice and truth, the problem is that the adversarial theory does not appear to be designed to elicit the truth of a matter. The objective in an adversarial trial is to win, by any means allowed by the trial rules, even if it means using persuasive but fallacious arguments. In this light, especially if one tacitly accepts the positivistic definition of information, the inquisitorial system seems like the best form of trial to reach the truth of a matter. Jerome Frank, a critic of the adversary system who has been much quoted, wrote, "To treat a lawsuit as, above all, a fight surely cannot be the best way to discover facts".⁸ One general problem is that "zealous advocacy taints evidence presentation" (Strier, 1996, p. 105). In particular, "testimony is constantly dissected and contradicted and shaped toward partisan ends". Defenders of the adversary theory argue that the truth arises out of the fight because the trier can see the arguments on both sides interacting with each other and can judge which

⁸ Strier (1996, p. 102) called Frank's views "much-quoted". Frank (1963, p. 80) contrasted the "fight theory" of the trial with the opposed "truth theory".

is the better argument. But how is that possible, or realistic, as an account of how the trial can get to the truth of a matter and provide justice for both sides? The answer comes through because most of the argumentation put forward as evidence in a trial is defeasible. Such arguments can be mistaken and deceptive. They can and do lead to wrongful convictions in some cases, and this possibility can never be wholly excluded. Truth and justice arise from a trial on the adversary theory by a negative route. The clashing of opposed arguments, when they are strong on both sides, enables the trier to see the weak points as well as the strong points on both sides. Witness testimony provides information, and so the dialogue is more than just a fight between two ignorant or unformed antagonists. But the information may or may not be reliable. It needs to be probed, tested, and criticized. The best way to do this may be the adversarial trial.

As already indicated in Chapter 1, seeing appeal to witness testimony as some sort of transfer of information appears to be much too naïve as a hypothesis to explain what really goes on in a trial. Anglo-American law is based on an adversarial theory. The examining lawyer is an advocate for one side, and she is not just trying to get any information relevant to the issue being tried. She will try to get mainly information that will tend to support her side, as far as she can tell. She will generally ask questions that she knows the answers to in advance, in order to prevent information from coming out that might tend to harm the interests of her client.⁹ In cross examination she will even try to trip up the witness by making his testimony appear to be contradictory or unreliable. In Anglo-American law, it seems that the information given by the examination of a witness arises out of a confrontation between the questioner and the witness. Thus if information-seeking dialogue is really going on in witness examination, it is a peculiar use of it, which also seems to be guided by overarching aims. The same can be said of the inquisitorial system. The trier cannot just passively collect what are assumed to be the facts of a case. She has to actively assess the worth of each fact as evidence, in relation to the other facts collected in

⁹ Trial practice manuals are very conservative when giving lawyers advice on how to conduct a cross-examination. The main rule is to be brief and only ask short questions because of the danger of a backfire if the witness is given any latitude. Irving Younger's ten commandments of cross-examination are often cited. These can be summed up by the following four principal items of advice: Never ask a question to which you do not already know the answer. Ask only leading questions. Never permit the witness to explain. Avoid asking too many questions. Younger even made a film called *The Ten Commandments of Cross-Examination* that nearly all lawyers have seen at one time or other in their careers (Park, 2003, p. 133). The main reason lawyers are so cautious about cross-examination can be summed up in the word 'backfire'. Among the famous backfire cases cited by Park (2003, pp. 134–42) is the following. A lawyer asked an old and scruffy-looking man who was a witness whether he had ever been in prison. The old man answered 'yes'. When the lawyer asked where he had been in prison the witness answered that he had been a prisoner of war during the Civil War. This unexpected reply made the cross-examiner "seem to shrink" (Park, 2003, p. 134).

the case, and arrive at some evaluation of the mass of evidence collected. Evaluating witness testimony as weak or strong is an important part of that assessment.

The problem with appeal to testimony is that it is quite weak and fallible, as noted in Chapter 1, because it rests on some highly questionable assumptions. The warrant on which this form of argument is based is the generalization that, other things being equal, since the witness (presumably) is in a position to know about the matter in question, what she says is genuine information. Suppose a witness tells us that statement *A* is true. The conclusion can then be drawn that *A* is true, or at least that the testimony is a reason to take it as true, other things being equal. So what kind of warrant is this generalization, and what kind of inference does it support when such a conclusion is drawn? Some clue to the answers to these questions has been given by argument 6 in the generalization (p. 30), which cannot be regarded as holding absolutely. The kind of inference it warrants is a plausible inference in the sense of Rescher (1977). Arguments from witness testimony can be highly plausible in some cases, but they are rarely if ever conclusive. Finding the truth of a matter may not be all that easy.

Some might say, on this basis, that the adversarial system allows the attorneys to control the evidence, and it is tainted by their bias. On a positivistic view, appeals to witness testimony are seen as merely subjective. The worry is that use of them as arguments only represents a kind of guessing that is too subject to error to ever be trusted as real evidence on which to say that a statement is true or false. After all, in science, long ago we gave up basing conclusions that are supposed to represent scientific evidence on what somebody or other said. What should be important, this critic might say, is that any scientific conjecture must be tested. It must be verified or falsified by the test of empirical data or experimental testing. By this criterion of objective evidence, appeal to witness testimony fails as evidence. Yet in law it is called 'evidence'. What sort of justification could be given to support this usage and to reply to the critic's doubts? How could witness testimony be evidence, at least in the legal sense?

A problem in the Anglo-American system is that examination of a witness is a process that seems so highly adversarial. It may seem that the questioner is leading the witness, or alternatively, trying to make the witness look bad. When a witness is confused by a clever sequence of questioning that traps him into a contradiction, it may make the witness look bad, and it may make the witness wary, and put him on the defensive. It may be hard to see how this process is yielding information that is evidence, or is even useful at all. The limiting nature of 'yes' and 'no' witness responses does not allow the passive jurors to ask clarifying questions (Strier, 1996, p. 105). Cross-examination can be a stressful and even exhausting process for a witness that does not go toward the truth but leads away from it. Even an honest witness can be trapped into contradictions by a skillful cross-examiner. Crump (1997,

pp. 31–2) offered the following example dialogue to illustrate this technique at work.

- Q. You put your underclothes on, didn't you?
 A. Yes.
 Q. And you put those on before your outer clothes, right?
 A. Yes.
 Q. And next you put on your socks.
 A. Yes.
 Q. Put on your right sock, didn't you?
 A. Yes.
 Q. Put on your left sock, didn't you?
 A. Yes.
 Q. And I reckon you put on your trousers too?
 A. Yes.
 Q. You put on your left leg first, didn't you?
 A. (Haltingly, while reaching down to try to figure it out) I – I guess so.
 Q. You put on your right leg next, didn't you?
 A. Uh . . . yes.
 Q. You have a habit of putting your left leg in first, don't you?
 A. I don't know. I guess so.
 Q. But you contradicted that with what you told me about your socks, didn't you?
 A. What?
 Q. (Firmly) You told me you put your right leg in the right sock first.
 A. (Involuntarily seeming shift-eyed) Fact is, I don't specifically have a present recollection of which way it was.
 Q. You put your shirt on next?
 A. Yes.
 Q. Buttoned the buttons from the top down?
 A. (Newly wary) No. I think it was from the bottom up.
 Q. Tied your tie? That came next?
 A. At some point in the process.
 Q. Did you tie a four-in-hand knot, or was it a Windsor?
 A. (Miserably) I – can't answer that because I don't know the difference.

By the end of this examination, the witness has become so wary of possible entrapment that he is starting to plead loss of memory as his routine response. The dialogue hasn't really gone anywhere or accomplished anything that is materially relevant to the trial.

Notice that the examination dialogue above contains many leading questions, such as "You put on your left leg first, didn't you?" These kinds of questions are called 'tag questions'. A tag question (Ogle, Parkman, and Porter, 1980, p. 44) contains both a statement and a question, in such a way that the statement is implied as the answer indicated by the question. For

example, the question above implies the answer that the respondent put the left leg of his pants on first. Tag questions, along with yes–no questions, are limiting kinds of questions that are often dangerous in leading a respondent toward a particular reply just because of the structure of the question itself. Structures of the different kinds of questions are taken up in Chapter 2.

The kind of questioning illustrated by the example of examination dialogue above, even though it uses tag questions repeatedly, is of a sort that could generally be allowed in a trial in the Anglo-American legal system. The rationale is that the sequence of questions in this kind of case could be relevant in a trial to the extent that the credibility of the witness is being tested by the questioner. But Crump comments (1997, p. 32) that in many cases, such a prolonged sequence of questions is a “rabbit trail” that goes nowhere. The evidential value of the whole sequence of questioning seems to be minimal. The witness may eventually be exhausted by the whole exercise, but what does it really prove? Perhaps very little if anything in the trial as a whole. It could even be misleading if the witness is honest, and only trying to answer the vexing series of questions as truthfully as possible. The use of such tactics of delay could have a strategic purpose. It could be used to entertain the jury, or to set them up for another line of argument once they are tired out. A skillful lawyer can conduct a day-long or even week-long examination of this sort “without suffering the jury’s disdain”, according to Crump. The tactic used could be one of distraction, even used to exhaust the jury. For example, the examination of forensic expert Dennis Fung, which lasted almost two weeks in the Simpson case, “debilitated the witness” (Crump, 1997, p. 33). Such a delaying technique in an examination dialogue is a sophisticated tactic.

9.2. *Obtaining Reliable Information*

The problem is that the purpose of witness examination is to obtain information from the witness that is true, or at least reliable, and that is relevant to the ultimate issue to be decided in the case. But to get assurance that the story given by the witness is true, or reliable as an account of what really happened in a case, the examiner may have to probe into the details of the story. Part of this probing may rest on the finding of gaps in the story, or even contradictions in it. In some cases, the story presented by one witness may differ from, or even flatly contradict, the story presented by another witness. But how is such a story to be probed for accuracy and plausibility? What makes one story more plausible than another? What conclusions should be drawn from a story? How should the missing parts be filled in from the given evidence? When does testing out a story go over the boundary and become the irrelevant attacking of a witness by fallacious personal attacks and other sophisticated tactics? The answers are to be sought by looking to several factors. One is that the witness in a court of law swears to tell the truth. Another is that there are legal penalties for perjury. But despite these

incentives, we know that witnesses often lie, or that their testimony is wrong or misleading. But there is a third factor to be considered. Witness testimony can be tested in court through the process of examination. The role of the witness in examination dialogue in a trial is to answer questions. The witness takes an oath to tell the truth, and if the witness lies during the examination, it is a case of perjury, which is a punishable offence. The role of the examiner is to ask questions that are supposed to elicit information that the witness is thought to possess and that will provide evidence that may be useful in the case being tried. It is this dialogue that is used to test witness testimony.

But how does this testing function of information-seeking dialogue work? In many instances, the witness presents what is called a ‘story’, a connected account that tells what supposedly happened in a given case being asked about. How can such a story be tested or evaluated, to try to figure out what really happened? The answer is that plausible reasoning must be used. Plausible reasoning is different from the kinds of reasoning traditionally studied in logic – deductive and inductive reasoning. Plausible reasoning is a form of intelligent or informed guessing that involves the postulation of a hypothesis that is defeasible. As shown in Chapter 1, appeal to witness testimony is defeasible. To say such an argument is defeasible means it holds tentatively in a given case, but is subject to defeat as new information comes in to the case. The argument put forward in each case needs to be evaluated contextually on its merits by asking the right critical questions. This means the evaluation process takes the form of a dialogue in which the plausibility of the story given by the witness is tested by examination.

The following case, quoted from Wigmore (1935, p. 43), provides a nice illustration of using plausible reasoning as a testing procedure applied to witness testimony in a trial.

The Orphans’ Case

The funds of an estate of orphans were in the hands of an administrator, who was sued for a deficit. His plea was he had paid the money away in discharge of a bond. He produced a witness who testified that in his presence the defendant had paid the money in silver, bringing it on foot from his home several miles away. On further questioning he specified the details of distance and amount. Counsel for the plaintiff, having figured out how much the normal amount of dollars would weigh in silver, found that it reached some hundreds of pounds. When he was asked, how could such a weight be carried on foot, the witness broke down. His *testimonial* evidence was false, and the verdict was for the plaintiff.

This case shows how cross-examination can reveal the implausibility of a claim made by a witness. The claim sounds plausible enough on the surface. But once it is examined carefully, its plausibility is thrown into doubt. Why? The answer is that everyone knows certain things, as a matter of common

knowledge about ordinary ways of doing things and normal human capacities. Carrying a bag of coins weighing hundreds of pounds for several miles on foot is a hard task that the average person would not be capable of under normal circumstances. It is implausible that a person would normally even attempt to carry out such a task.

Thus the provision of evidence in a trial through the testing of witness testimony in a dialogue can be more successful or less successful, depending on the quality of the dialogue. In some cases, it can lead away from the truth. In other cases, it does not appear to be moving toward the truth and its only function seems to be that of an adversarial attack. But such cases can be viewed differently if one gives up the old idea that collection of information, just the facts, is all that matters. In the kinds of cases that go to trial, it may not be realistically possible to come to know the truth. What happened or did not happen took place in the past, and few reliable records telling us what the facts really are may be available. The best we can do is to judge, based on the evidence, which side in the dialogue has the argument that meets the requirements of burden of proof in order to enable the trier to reach a reasoned decision that resolves the conflict of opinions. Such a dialogue is successful if it brings out information that the witness is in a position to know about, and if it adequately tests that information for reliability by asking probing questions. These questions can have different functions, but one important one is to test the plausibility of the account given by the witness. In other words, plausibility may be the best we can hope for in a successful argument, as opposed to finding the 'facts' and the 'truth', as one might think of these things on the inquisitorial theory.

10. A New Approach

Appeal to witness testimony is a far from perfect form of argument. As shown dramatically in Section 1 above, witnesses sometimes distort the facts to fit their own preconceptions and experiences, or even lie. In any real case of using witness testimony, any of the assumptions discussed above, on which this kind of argument rests, can fail. As noted just above, the problem is whether such an argument can be tested or evaluated as evidence in some objective way. In traditional deductive logic, an argument is evaluated in a one-step process. A deductive model, such as propositional calculus, is directly applied to the argument, and tests out whether the argument is valid or not. A defeasible argument, such as appeal to witness testimony, cannot properly be evaluated in this same one-step way. The way to solve the evaluation problem lies in seeing this form of argumentation as testable in a connected sequence of argumentation. It could carry probative weight at one step in the sequence, but then be defeated in the next step of the sequence. Then, as a critical question was answered, its probative weight could be

restored at the next step in the sequence. Now we come to the problem of determining what sort of rules or structures govern such sequences of argumentation. As indicated above, it is important to realize that the context of use of the argument is important.

What makes anyone think that the ambitious program of adopting a dialogue model of argumentation is possible? It seems extremely ambitious to think that appeal to witness testimony could be treated as a form of argumentation that could be evaluated in a dialogue framework. From the viewpoint of traditional logic, the task would likely appear to be hopeless. However, a glance at some recent work in AI and law will show that analysis of legal justification and argumentation is very much moving in this direction. Moreover, very promising results have already been achieved.

10.1. *Argumentation and Artificial Intelligence*

AI has turned to argumentation as a field that offers a way of dealing with the central problem of defeasible arguments in computing. Some of the early work in argumentation had a legal motivation. The influential analysis of argumentation (Perelman and Olbtechts-Tyteca, 1969) was based on a dialogue model, and also featured examples of legal reasoning treated in a dialogical (dialectical) format. Perelman (1963) had also written on legal argument from a dialectical point of view. According to Perelman, a legal justification is not a formal proof, because a judge must interpret a rule, and also weigh other factors, when deciding a case. Perelman based his analysis of how this process of legal assessment of arguments should work on many argumentation schemes (summarized in Feteris, 1999, pp. 54–5). It is clear that these argumentation schemes can be opposed to each other in specific cases, and thus that there can be arguments both for and against a particular conclusion.

In an influential book on legal argumentation, Alexy (1989; original German version 1978) based his theory on what he called rules of general practical discourse. The rules can be viewed as dialogue rules governing argument moves made by a proponent and a respondent in legal discourse. For example, one rule is that a speaker may not contradict himself. Another is that a speaker must state what he actually believes. Another rule states that whoever has put forward an argument is obliged to defend it when confronted with counterarguments. The offering of these characteristic dialogue rules indicates that Alexy had moved to a dialectical model for evaluating legal argumentation.

Another development was the growing interest in legal argumentation on the part of those working in AI. Bench-Capon (1995) recognized the crucial role that argumentation plays in legal justification and showed how the dialogue format of argumentation is highly compatible with computer

formalization. Hage, Leenes, and Lodder (1994) analyzed procedural reasoning of the kind used in argumentation in so-called hard cases in law. They developed what they called a “dialogical reason based logic” through the analysis of the reasoning used to justify conclusions in these hard cases. According to their analysis, legal reasoning needs to be seen in a dialogue framework that can model an adversarial setting in which there are arguments on both sides of a case. But in order to accommodate their analysis, they showed that just thinking of logical reasoning in law as a chain of inferences is not good enough, and that rules governing the moves of dialogue between the two sides also need to be taken into account. They conclude (p. 113), however, that there is no one set of dialogue rules governing the argumentation in a case: “there are many concurring sets of rules that govern particular types of dialogue.” This analysis, along with concurrent developments in AI and law, pointed the way toward a dialectical treatment of argumentation.

Gordon (1995) developed a dialogue model of legal pleading in a format that can be implemented on a computer, inspired by Alexy’s discourse theory of legal argumentation. The purpose of the pleadings game is to identify the legal and factual issues of a case (Gordon, 1995, p. 109). The pleading stage is seen as the first in a four-stage series of civil proceedings also having a discovery stage, a trial, and an appeal (p. 110). The two parties in the pleadings game are called the plaintiff and the defendant. The plaintiff begins by filing a complaint, and then the defendant may file an answer (p. 111). In the answer, each of the assertions in the complaint can be admitted or denied, or a motion to dismiss can be made (p. 111). The actual argumentation that ensues in the pleadings game is defeasible, turning on rules that are cited, and on what are alleged to be exceptions to the rule. What is most interesting about the pleadings game is its dialogue format, the fact that it is meant to fit a computer format, the fact that it uses defeasible argumentation, and the fact that it represents a recognizable kind of legal argumentation.

Lodder (1999) has presented a dialogical model of legal justification that incorporates many of the best features of prior dialogue systems developed not only in legal theory, but also in logic and argumentation. Lodder’s system of dialogue for legal argumentation builds on many of the previous formal dialectical systems, such as those of Lorenzen, Barth and Krabbe, Hamblin, and Perelman (see acknowledgements in Lodder, 1999, p. 7). Lodder’s book summarizes many of these earlier systems and comments on how various features of them can be adapted to the study of legal argumentation. It is clear from Lodder’s work that the dialectical approach to the analysis and evaluation of legal argumentation has come of age and that the use of systems of dialogue to study problems of how to model legal argumentation is now widely accepted. In particular, the fitting of the dialogue format

both into computing and into legal argumentation is a big step forward. These developments make the project of using a dialogue model to study appeal to witness testimony as a form of argument highly plausible and worth investigating.

Another direction of research was the concentration on defeasible reasoning in AI. Much of the impetus to move in a dialectical direction came through the recognition that legal argumentation is defeasible, in the most typical and interesting kinds of cases. But this impetus was supported by the recognition of the importance of defeasible reasoning in many different fields of computing. It became clear that the defeasible model of reasoning was not only useful, but vitally necessary to move developments ahead. To model so-called common-sense reasoning, of the kind a working robot would use, it became evident that defeasibility had to be taken into account. Prakken (1997) considered and evaluated many formal models of defeasible reasoning in an attempt to provide logical tools for modeling legal argument. Going beyond the traditional deductive and inductive models of argument, which view argument from the standpoint of a single reasoner, Prakken was led to the need for a dialectical model that could view argument as a dialogue between two parties. How this need became apparent can be appreciated by considering the defeasible aspect of legal argument. A defeasible argument is a probative inference that can give support to its conclusion, even though the exceptions allowed by it imply that there can be opposed arguments that are also probative. Prakken was led to conclude that the only way to model defeasible arguments of this kind was to develop a logical system on which there could be legitimate arguments on both sides of a case. Thus Prakken was led toward a dialectical model of legal argument.

Van Eemeren and Grootendorst (1984, 1987, 1992) developed a dialogue model of argumentation that has provided a standard and focus around which much of the recent work in argumentation has centered. They called their model of dialogue the critical discussion. The critical discussion has four stages, called the confrontation stage, the opening stage, the argumentation stage, and the concluding stage. The goal of the critical discussion as a type of dialogue is to resolve the initial conflict of opinions by means of rational argumentation. There are rules for the moves made in each stage by the two participants in the dialogue. These rules ensure that both parties stick to the point and that they use commitments of the other party in their attempts to persuade the other party by means of rational argumentation (van Eemeren and Grootendorst, 1987). The critical discussion is not a formal or computerized model of dialogue, but the rules are clear enough to give a useful idea of the norms that should be appropriate for this type of argumentation. The critical discussion model was used by Feteris (1999) as the basis for her theory of legal argumentation. Feteris modeled the kind of argumentation used in a trial as taking the form of a critical

discussion, though of a somewhat complex sort. In a trial, whether it be a civil or criminal case, one side can be viewed as the proponent and the other side as the respondent in a critical discussion. The purpose of the dialogue is to resolve the conflict of opinions that is the issue or 'action' of the trial. But in addition to this main dialogue in the trial, there is another type of dialogue to be considered. There is also a discussion between the opposed parties and the judge (trier). The judge must use institutional rules to decide the outcome of the case (Feteris, 1999, p. 172). The judge must also base his decision on argumentation, used to give reasons to support the conclusion he has arrived at in a case.

10.2. *Turning to a Dialogue Model*

Given all these developments in AI and legal argumentation, it is an attractive and useful project to investigate how appeal to witness testimony can be analyzed and evaluated as a form of argumentation used in a dialogue structure. If Feteris is right, the argumentation in a trial can be viewed within the normative framework of the critical discussion model. The critical discussion is identified with the persuasion type of dialogue in Walton and Krabbe (1995). In this model, then, the two sides are supposed to use rational argumentation to support their initial claims by a process of rationally persuading the other side. But if this approach to legal argumentation is headed in the right direction, it still leaves open the problem of how evidence comes into the trial and is presented to the trier. It seems that there is some other type of dialogue embedded in the central persuasion dialogue. And in fact, this description of the dialogue structure of legal argumentation in the trial fits well with the context of how appeal to witness testimony is used, as outlined in the section above. For all these reasons, the project of investigating appeal to witness testimony as a form of argumentation within the format of a dialogue structure is worth pursuing.

As this book continues, it will be argued that appeal to witness testimony cannot be evaluated simply in one step, the way we have come to expect in logic, even though it might initially appear that way. It will be shown how appeal to witness testimony needs to be evaluated within an extended sequence of argumentation within a framework of evidence examination. The hypothesis put forward is that such a sequence needs to be evaluated in a dialogue format in which the appeal to testimony should be regarded as open to certain appropriate critical questions. If the right question is asked, and not properly answered, the argument is defeated at that point in the sequence, until a point later in the sequence where the question is answered. The innovative aspect of this analysis is that it shows appeal to witness testimony to require for its proper evaluation a connected sequence of argumentation in a dialogue (dialectical) framework. The key to evaluation of the argumentation is to be sought in the aim of the sequence. The pragmatic hypothesis already suggested by Chapter 1 is that such a sequence

needs to be judged in a goal-directed dialogue framework in which two participants ask and answer questions, to seek information to be used as evidence in argumentation to resolve a disputed issue. The rest of the book will provide further evidence to support this hypothesis, and a framework for implementing it, by showing how such a dialectical structure can be built.

Computational Dialectics

Evaluating argumentation in a dialogue model, in which two parties reason with each other, is an old idea that goes back to Aristotle's earlier writings, and even to the sophists. But after the Greeks, the idea lost favor, although it persisted for a time in the scholastic disputations of the middle ages. Aristotle's syllogistic dominated the field of logic for many centuries, until it was superseded by other forms of deductive calculi – propositional and quantifier logics. It was not until the advent of the Erlangen School in Germany that anyone tried to revive the dialogue model and to carry out a systematic program for constructing a system of calculation based on it.¹ But it was not until Hamblin's construction of mathematical models of dialogue (1970, 1971) that a general structure of logical dialogue systems was put forward that was well enough developed to show promise of providing methods for evaluating arguments and fallacies that would hold practical interest for logicians. Alexy (1989) showed how such dialogue systems can be applied to legal argumentation, a program that is now being carried forward by a group of researchers in AI and law including Bench-Capon (1995), Prakken and Sartor (1996, 1998), Verheij (1996, 2000), and Lodder (1998, 1999). This line of research is now often called computational dialectics. It would appear that Gordon invented the term. As indicated in the preface to *The Pleadings Game* (1995, p. xi), Gordon defined and used the term in his thesis of 1993 (an earlier version of the book). He also used the term in two papers (Gordon 1994, 1996) in which the title even included the term. Chapter 4 provides an introduction to the basic components and concepts of computational dialectics that are most useful for the reader who is not a specialist in argumentation theory or artificial intelligence and that one needs to know in order to follow the analysis of witness testimony in the following chapters.

¹ Alexy (1989, pp. 138–54) outlined these historical developments.

Various formal systems of dialogue have been developed since Hamblin that are meant to be used as normative models in which argumentation can be analyzed and evaluated. Several different systems have been proposed in the recent literature that share basic components, even though they have different features and proposed uses. A normative model is a theoretical device that is useful because it specifies requirements and standards that an argument (or other move in dialogue, such as the asking of a question) should meet if it is to be considered structurally correct. The approach that will be taken can be described as pragmatic as well as normative. Recent research in argumentation theory and computing has developed methods for evaluating arguments, and other kinds of moves made in argumentation, in specific cases. The methods are pragmatic in the sense that they evaluate how an argument is used for some purpose in a given case in relation to the context of use of the argument appropriate for that case. They are dialectical in the sense that every argument is seen as being used in a goal-directed, collaborative conversation, *dialektikos* being the ancient word for conversation. There can be many reasons for constructing such systems, and there are many areas of application, including artificial intelligence, especially multiagent systems in computer science, and the investigation of aspects of cognitive psychology. The application emphasized in this survey is to the analysis and evaluation of witness testimony in legal argumentation. The basic components that all the dialogue systems share are clearly explained and illustrated, and a classification system is presented that shows six basic types of dialogue that are especially important for evaluating argumentation of the kind used when examining a witness in court. Several methods are introduced, such as the profiles of dialogue method and the technique of argument diagramming, that are useful for the analysis and evaluation of legal argumentation.

1. Fundamental Notions

The three fundamental notions of dialogue are the following: (1) the two participants, usually called the proponent and the respondent, (2) the moves (speech acts) made by the two participants, and (3) the sequence of moves – that is, the two participants are taking turns making moves, where each move depends on the move just prior to it made by the other party. Another fundamental notion is the idea that the sequence of moves is moving toward some goal. This fourth notion is taken up below.

1.1. *Ordered Sequences of Moves in a Dialogue*

Hamblin (1971, pp. 131–2) showed how notions (1), (2), and (3) are combined to make up the concept of a dialogue as a sequence of moves by two parties. Each member of such a sequence is defined by Hamblin (1971, p. 130) as a triple, $\langle n, p, l \rangle$, where n is a number representing the length of

TABLE 4.1. Typical Profile of Dialogue

Proponent	Respondent
1. Why should I accept A ?	Because B .
2. Why should I accept B ?	Because C .
3. I do not accept A .	Do you accept B ?
4. I accept B .	Do you accept 'If B then A '?
5. Yes.	Do you accept A ?

the dialogue (the number of moves so far), p is a participant, and l is a locution. Then each member (move) in a dialogue may be identified with the triple $\langle n, p, l \rangle$. A dialogue can then be represented as a numbered sequence of such moves. Hamblin (1971, p. 131) offers the following example.

Dialogue I: $\langle 0, P_0, L_4 \rangle, \langle 1, P_1, L_3 \rangle, \langle 2, P_0, L_2 \rangle$

In dialogue 1, an example of a sequence of length 3 is given. At the first (zero) move, the first participant put forward a locution, L_4 . At the second move, the other participant put forward another locution, L_3 . And then at the third move, the first participant replied by putting forward another locution. Any dialogue can be modeled in this way, as a numbered sequence of moves.

Another method of modeling the sequence of a dialogue has been widely used – by Hintikka (1979, 1992, 1993, 1995), by Hintikka and Hintikka (1982), by Barth and Krabbe (1982), and by Carlson (1983). It is the method of using Beth-like tableaux to list the sequence of moves in a left column and a right column, as in the case in Table 4.1. In Table 4.1, the illustration of the tableau method has been adapted to the notation used here. The letters A, B, C, \dots stand for propositions.

In the sample dialogue illustrated in Table 4.1, the proponent starts the sequence by asking the respondent why he accepts proposition A . The respondent replies that his reason for accepting A is to be found in another proposition B . What is illustrated here is two kinds of moves explained below. One is the why-question. The other is the argument, a kind of speech act in which one proposition (or a set of them) is cited as a basis for support of a queried claim of a particular proposition. The dialogue continues as the proponent continues to question the respondent. We can see where the dialogue might be leading. If the respondent answers affirmatively to the proponent's question at round 5, then he is in some danger of being caught in an inconsistency. In any event, the illustration shows how the tableau method is used to represent the sequence of argumentation in a dialogue exchange. Each number at the left represents a round, or a pair of moves by one party and then the other. Using Hamblin's numbering system, the

sequence would begin with the zero-move, or initial move, and then each pair of move-numbers would be a round.

Dialogues can have the participants making many kinds of moves, but four kinds of moves are especially fundamental, in light of the professed concentration on argumentation here: (1) the asking of questions, (2) the making of assertions, (3) the retracting of assertions, and (4) the putting forward of arguments.

There can be many different kinds of questions asked, but the two most fundamental types of questions are yes–no questions and why-questions. A yes–no question admits of only two direct answers – the affirmative answer (yes), and the negative answer (no). A yes–no question is designed to rule out the option “I don’t know” as an answer or acceptable reply. The yes–no question is typical of what is called a closed question, which limits the options for the respondent, typically to a very small number of options. Ogle et al. (1980, p. 44) call a closed question a “choice question”, because it limits the choices of the respondent in answering. The open question, for instance, “What do you think about it?” does not restrict the respondent to some small, finite set of direct answers. Referring to witness examination in law, Ogle et al. (1980, p. 44) call an open question a search question, which “allows a witness a broad range of answers”. Why-questions can be of various types, but the most basic one to be considered here is the type that requests an argument to support some specified claim. In this sense, the question ‘Why A?’ is a request for an argument that has *A* as its conclusion and has some other propositions that can function as premises that give reasons that the questioner should become committed to *A*.

How questions are asked and answered is obviously important to examination of testimony in a trial, but one might wonder whether profiles of dialogue are also applicable to arguments of the kind that might be found in a trial or other legal setting. An example of a typical legal dispute, an altered shorter version of one presented by Prakken and Sartor (to appear, p. 345), can make this evident.

The Fingerprints on the Knife Dialogue

Proponent: I claim that John is guilty of murder.

Respondent: I deny your claim.

Proponent: John’s fingerprints were on the knife.

Respondent: Witness X says that John pulled the knife out of the dead body, and this shows why his fingerprints were on the knife.

Proponent: This testimony is inadmissible, since she is anonymous.

In this dialogue each move is an argument, and each one except the first is a reply to a prior argument. An argument is a set of propositions in which one is designated as the conclusion, a proposition that the respondent is not committed to, or even is opposed to, and the others are the premises.

The premises are propositions that the respondent is either committed to, or can be brought in the dialogue to become committed to, and are such that, if he becomes committed to them, he must become committed to the conclusion as well. In other words, when the questioner puts forward a why-question to the respondent, she is informing the respondent that she doubts a certain proposition, and that she is requesting the respondent to furnish some other propositions that will remove these doubts, or can be so used in the dialogue.

At this point, it seems as if virtually any kind of legal argumentation could be cast in the dialogue form. We might consider, for example, the following kinds of conversation in which argumentation occurs.

Evidence is discussed in an investigation into an air crash.

A lawyer argues in a trial that the defendant is guilty.

A lawyer asks a witness whether he saw Smith hit Jones.

A lawyer cross-examines a witness, claiming he is lying.

Jury members try to get one person to agree with their view.

A judge and lawyer engage in plea bargaining with a witness.

Judges on the Supreme Court dispute a controversial case.

A contract to close a business deal is discussed by the principals.

Members of a law firm discuss whether to take on a case.

When one lawyer personally attacks another in court, the judge intervenes, telling her to stop or face a penalty.

All these cases are ones in which legal argumentation is taking place, or is involved. But there could be different kinds of dialogue in the different cases. Moves and sequences of moves that are appropriate in one type of dialogue could be inappropriate and irrelevant in another type of dialogue. For this reason, just utilizing the basic components of participants, moves, and sequences of moves would not be adequate to the analysis and evaluation of legal argumentation.

The paradigm case of legal argumentation is that of the common law trial, inherited from the English common law tradition. It is the theoretical centerpiece of the adversarial justice system in the United States. Less than ten percent of court filings ever end up in trial, but the trial pervades law and culture because participants in other forms of dispute resolution use the trial as a model (Park et al., 1998, pp. 1–2). The common law trial is an adversarial system of justice in which the prosecution and defense attorneys present opposed arguments, and a trier of fact, a judge or jury, decides the outcome of the case. This type of dialogue already sounds more complicated than the system outlined above, because it requires four participants – the two attorneys, the judge, as procedural monitor, and the trier of fact, who could be the same judge, or who could be a jury. Trials involve multiple parties on both sides, but Park et al. (1998, p. 4) employ what they call a “minimum model” in examining the central features of the argumentation

in a common law trial. In this model, there are “two opposing parties” and “one issue, for which the plaintiff, or prosecution in criminal cases, bears the burden of persuasion”. It is this minimum model that we must begin with when analyzing argumentation in a trial. But to analyze witness testimony and other forms of legal evidence more fully, the minimum model eventually needs to be expanded. Note that in the minimum model of argumentation in dialogue, a participant is not any actual person, but rather represents an entity that makes moves in a dialogue and performs a certain role or function in the dialogue.

1.2. *Moves as Speech Acts*

To sum up, then, a dialogue, in the simple model put forward so far, is a sequence of moves made by two (in the simplest case) participants. A move is a speech act, such as asking a question or making an assertion that is attributed to the one participant or the other.² How a dialogue is made up of a sequence of speech act is shown in Figure 4.1. The moves are connected together in a sequence of speech acts. The sequence has a direction, as the thread of argumentation ties the sequence of moves together in a coherent pattern. The last point in the sequence of moves represents the goal that the dialogue is supposed to be aiming for.

An especially important kind of move is the putting forward of an argument, but there are other key speech acts that are closely related to it, such as the speech act of putting forward a presumption in a dialogue. An example is presumption of death in law, whereby a court may rule that a person is presumed to be dead if there has been no evidence that she is alive for a fixed number of years. Another example is the letter rule (Park et al. 1998, p. 103), stating that a letter properly addressed, stamped, and deposited in an appropriate receptacle will be presumed to have been received in the ordinary course of the mail. Unless there is evidence to the contrary, the letter will be presumed to have been received in what is considered to be the ordinary amount of time needed in an area.

It is useful to compare and contrast the speech acts of assertion, assumption, and presumption. When you make an assertion, you are obliged to offer evidence to support it, if you are challenged, or give it up. But there is no such burden of proof for making an assumption during a discussion, even if you cannot prove it. Presumption is halfway in between. When you make a presumption, you are not obliged to offer a justification for it, but you are obliged to give it up if the other party can disprove it.³ Table 4.2 summarizes the properties of these three speech acts. In the letter rule, for

² On how a move in a dialogue is defined as a speech act in terms of the commitments of the participants in a dialogue, see Prakken (2001a, pp. 121–2).

³ Those familiar with fallacies will immediately see the connection with the *argumentum ad ignorantiam*. You presume that something is true without having to prove that it is true, but you do have to retract it if the other party can prove it is false. See Chapter 8, Section 3.

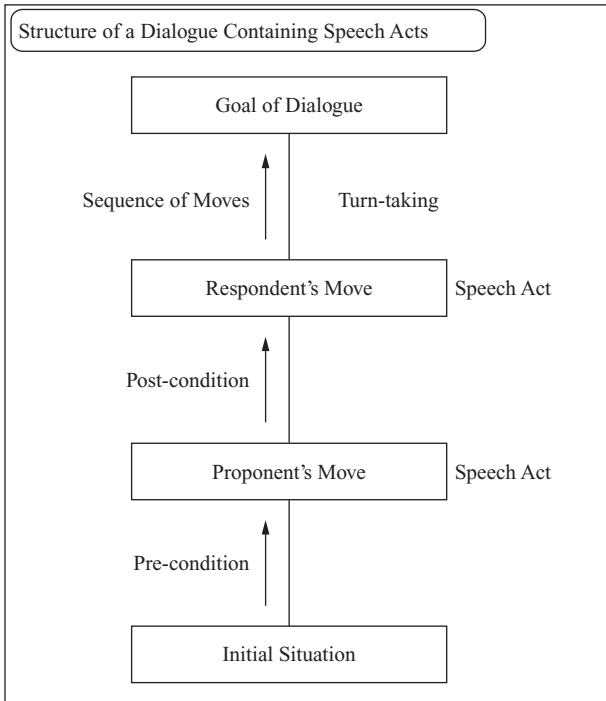


FIGURE 4.1. A dialogue as a sequence of speech acts.

example, the sender may not be able to prove that the addressee received it, but unless the addressee can prove that he did not receive it, a court will accept the presumption that he did.

2. Types and Goals of Dialogues

Many of the formal dialogue systems that have been formulated do not explicitly state any specific goal that the dialogue is supposed to fulfill. The general idea seems to be that the participants are arguing contestively against each other in some sort of intellectual or philosophical disputation in which the one who has the strongest argument wins and the other loses. The main dialogue systems in Hamblin (1970, 1971) follow this pattern. Hamblin was not overly concerned with the idea of the goal of the dialogue. He was content to say (1971, p. 137) that the formal systems he constructed were meant to be information-oriented in the sense that “it is assumed that the purpose of the dialogue is the exchange of information among the participants.” But Hamblin did not tell us precisely what he means by “information”, perhaps wisely, because the different types of dialogue had not yet been classified. Also, the formal dialectical systems he constructed (1970) for the purpose of

TABLE 4.2. Properties of Some Key Speech Acts

Speech Act	Goal	Precondition	Definition	Burden	Effect
Assertion	To put forward a claimed proposition for assent	Can be made at any appropriate point	Commits speaker to holding the proposition as true	Must justify (give support) or retract	Proposition added to speaker's commitment set
Assumption	To see where something leads by a chain of argumentation	Can be made at any appropriate point	No need for commitment to truth or even plausibility	No burden of proof	Respondent must accept it if it is relevant
Presumption	To secure tentative assent	Practical need to move forward in absence of proof	Commits speaker to holding a proposition as not false	Negative burden of showing the proposition is not false	Respondent must accept for now unless he can show falsity
Argument	To gain commitment by offering reason to accept	Doubt by the other party that can be addressed by offering reasons	Offering premises in support of the truth of the conclusion	Must defend the argument if attacked, or retract it	Helps move speaker's side forward to meeting burden

TABLE 4.3. Types of Dialogue

Type of Dialogue	Initial Situation	Participant's Goal	Goal of Dialogue
Persuasion	Conflict of opinions	Prove your thesis is true	Resolve or clarify issue
Inquiry	Need to have proof	Find and verify evidence	Prove (disprove) hypothesis
Negotiation	Conflict of interests	Get what you most want	Reasonable settlement that both can live with
Information-seeking	Need information	Acquire or give information	Exchange information
Deliberation	Dilemma or practical choice	Coordinate goals and actions	Decide best available course of action
Eristic	Personal conflict	Verbally hit out at opponent	Reveal deeper basis of conflict

analyzing fallacies seemed to have a purpose more like rational persuasion than exchange of information. He admitted (1971, p. 137) that transferring information is not the only purpose of a move in a dialogue: "In practice statements sometimes have other functions than to inform, such as to make an admission of something already admitted by others, or to exhibit a speaker's knowledge; and questions may serve as admission-elicitations or as knowledge-testing probes." In these systems of dialogue each party uses a series of single steps of inference as part of an overall strategy to try to get the other party to become committed to some designated proposition. For Hamblin, it seems, there can be a multiplicity of different types of dialogue with differing goals. What is needed to fill out Hamblin's formal analysis of dialogue is the articulation of different types of dialogue with different goals that can be more explicitly articulated. Recent work, both on fallacies and in the field of dialectical argumentation generally, has gone ahead with this task.

The classification of the six basic types of dialogue analyzed in Walton and Krabbe (1995) and Walton (1998) is presented in Table 4.3. These six types are not the only types of dialogue encountered in argumentation, but they are the six basic types most essential for analyzing and evaluating argumentation. As Table 4.3 shows, each different type of dialogue has a distinct goal. Although many of the same kinds of arguments are used in all the different types of dialogue, the evaluation of how an argument was used in a given case depends on the type of dialogue in which it was used. An argument that may be useful to fulfill one goal may not be useful to fulfill a different goal in a different type of dialogue.

Prakken (2005) has reviewed all of the leading formal systems of persuasion dialogue, especially concentrating on those that can be applied to AI and law, as well as other fields of computer science such as multi-agent systems, intelligent tutoring, and computer-supported collaborative argumentation. His review proposes a new way of formally specifying the components of persuasion dialogue and putting them together into formalized dialogue systems. And as well, it discusses how such systems should be applied to law and critically reviews how the model applies to the intuitive notion of rational persuasion as the giving of reasons to support or attack a claim.

The key example that Prakken uses (p. 3) to explain how persuasion dialogue works can be summarized in a few words. There are two participants in the dialogue, called Paul and Olga. Paul begins the dialogue by making the claim that his car is safe. At the second move of the dialogue, Olga asks Paul why his car is safe. This move is classified as one of asking for grounds to support a claim. Paul then offers the grounds requested: he says, "Since it has an air bag". Olga then states a counterargument by saying that the newspapers have recently reported on air bags that expand without cause. Paul replies that this does not prove anything, because newspaper reports are unreliable sources of technical information. Prakken classifies this move as one of undercutting an argument.

This simple example illustrates the basic components of a persuasion dialogue. There is a conflict of opinions on the issue of whether Paul's car is safe. Paul starts by advocating the thesis that his car is safe whereas Olga shows that she doubts this claim by the questions that she asks. Paul offers an argument to support his claim, and she critically questions this argument, by stating a counterargument. Paul then makes a move that illustrates the undercutting of the counterargument. Even the simple example dialogue illustrates the important distinction between a counterargument that is designed to rebut or refute the original argument it was aimed at, and an undercutting move that challenges the inferential link between the premises and the conclusion of the original argument it was aimed at.

The dialogue systems of Hintikka (1979, 1992) – as well as Hintikka and Hintikka (1982) – seem to be information-seeking in the classification scheme above. The Hintikka system (1992) models the Socratic dialogue of the type studied by Robinson (1953). The Hamblin dialogue systems, although said to be information-seeking, really appear to be kinds of persuasion dialogue in which one participant is trying to prove some designated thesis to the other, by means of chains of arguments using *modus ponens* and other kinds of deductive inference steps. The Mackenzie systems (1981, 1984, 1990) are patterned on those of Hamblin. The two parties appear to be contestively arguing with each other, each trying to prove his or her own thesis and refute the other party's thesis. It is hard to tell, because no specific goal is stated, but these formal systems appear to be closest to the persuasion

type of dialogue. Most systems constructed by philosophers appear to be aimed at representing the persuasion type of dialogue, the information-seeking type of dialogue, or the inquiry type of dialogue. Little has been done in the direction of constructing formal systems for negotiation, deliberation, or eristic dialogue within logic. But there is a large literature in AI on negotiation dialogue, because it is so important for electronic commerce, and there is a good deal of work on deliberation scattered through the literature on planning and goal-directed reasoning in AI.⁴ Intuitionistic logic, of the kind semantically modeled by Kripke (1965), has been used by Barth and Krabbe (1982) to construct a dialogue system that would appear to fall into the inquiry category. A detailed analysis of intuitionistic provability using a dialogue system has been provided by Felscher (1985). In the model of provability set up as a dialogue system, a team of investigators is trying to prove or disprove some conjecture by verifying an initial set of findings and then drawing inferences about what else can be concluded from these findings. The important thing is not to draw any conclusion that is even slightly questionable and that may later have to be retracted. More is said about this aspect under ‘commitment’ below. As one can easily appreciate, the inquiry system of argumentation is quite different from that of the persuasion dialogue.

Four principal formal systems of dialogue were constructed in Walton (1984) as structures to model the kinds of argumentation used in connection with informal fallacies. There was little thought given at this time to applying these models to studying legal argumentation, but they can be applied to persuasion dialogue of the kind commonly found in trials in Anglo-American law. Four formal dialogue systems were constructed, from a minimal one successively to stronger versions. The first system, called CB, is similar to previous systems devised by Hamblin (1970) and Mackenzie (1981). In this type of dialogue, each of the two parties, the proponent and the respondent, has a thesis to be proved as its ultimate conclusion, and it tries to devise strategies to prove this conclusion based on commitments of the other party. Hence CB can be classified as a persuasion type of dialogue. A problem with such simple systems of persuasion dialogue is that it is too easy for one party to start retracting commitments as soon as he or she realizes that the other party might use them as premises, especially as a premise might be used to attack his or her own position. To discourage such retractions, in CB+, the next system, each party is awarded points for making commitments. The party with the most points wins, if neither thesis was proved. In the third

⁴ Wooldridge (2000, 2002) has provided an explanation of how AI models goal-directed practical reasoning along the lines of a model in which multiagent communication takes the form of deliberation. A model of deliberation as a type of dialogue has been constructed by Hitchcock, McBurney, and Parsons (2001), and there are now software packages for negotiation that have adopted a dialogue model.

dialogue system, CBV, implicit commitments as well as explicit commitments are used. Each party has a set of implicit commitments that may not be known to either party, as well as a set of explicit commitments that are on public view and known to both parties. In this system, implicit commitments of a party are revealed if he tries to avoid commitment. For example, suppose the party denies that he is committed to a particular proposition, but it is revealed that it is among his implicit commitments. Now he has to resolve the apparent inconsistency.

We reserve comment on the fourth system, called CBZ, until we come to study another type of dialogue in Chapter 5 that resembles the type of argumentation conducted in CBZ. This type of argumentation involves a combination of persuasion dialogue with a probing into the commitments of the party being questioned in order to find hidden inconsistencies between explicit and implicit commitments. Concern with this type of dialogue will become the main focus of the investigation in Chapter 5, and the following chapters as well.

2.1. *Dialectical Shifts*

Cases of argumentation in natural language discourse can exhibit dialectical shifts – that is, the same sequence of argumentation can shift from one type of dialogue to another. For instance, a negotiation between a homeowner and a contractor about installing a cement basement may shift to an information-seeking dialogue on building codes and requirements. Such a shift could be beneficial to the negotiation dialogue, because it provides information that both parties need to arrive at decisions on pricing and choosing concrete. Whether a shift is licit, as opposed to illicit, depends on a number of factors. But primarily it depends on the goal of the type of dialogue the participants were originally engaged in. If shifting to the second type of dialogue still supports that original goal, and helps the argumentation move forward toward fulfilling that goal, then the shift is licit. If the argumentation in the second type of dialogue interferes with the fulfillment of the goal of the original type of dialogue, then the shift is illicit. That is the basic criterion, but other factors can be involved as well – for instance, one party may have forced the shift unilaterally, or the other party may even be unaware of the shift.⁵

⁵ A way to solve the formal problem of shifts has been indicated by Reed, Norman, and Jennings (2002). In the agent communication languages (ACLs) in use in computing, each agent in a multiagent system is equipped with an ACL, and it uses the ACL to communicate with the other agents. Or there can be a single authority that has control over the system and the ACL. However, when there is no such central authority, the agents can have a communication problem if they are using different ACLs, or need to shift to a different one, for some reason. To solve this problem, Reed et al. advocate an approach in which the agents can shift to a negotiation dialogue during which they negotiate the precise semantics they will use to communicate, according to their prevailing needs.

At any rate, what should be evident is that each type of dialogue has a goal, and the argumentation used in a dialogue should be evaluated with respect to whether or how it leads toward the fulfillment of that goal or not. How can this classification be applied to the ten cases of legal argumentation cited above? When a lawyer asks a witness whether he saw Smith hit Jones, this conversation would presumably be an information-seeking dialogue. When evidence is discussed in an investigation into an air crash, the type of dialogue involved would be an inquiry. When a judge and a lawyer engage in plea bargaining with a witness, this conversation would be a negotiation dialogue. When members of a law firm discuss whether to take on a case, this conversational exchange would be a deliberation. When one lawyer personally attacks another in court, that would be a quarrel, or eristic type of dialogue. But when the judge intervenes, telling her to stop or face a penalty, it would be a shift to a different type of dialogue which is a little hard to classify, but relates to the role of the judge as the overseer of rules of procedure in a trial. Without going into further details, enough has been shown to reveal that all six basic types of dialogue can feature as contexts for legal argumentation in different kinds of cases, and there can be shifts from one type of dialogue to another, in some cases.

As indicated above, the paradigm case of legal argumentation is represented by the trial, a kind of ritualized disputation format that has elaborate rules. How can we classify the argumentation in the trial as fitting into some general normative system of dialogue? Obviously it will depend on the kind of trial that you have in mind. For example, a civil trial is different from a criminal trial in certain respects. And the adversarial trial that we are familiar with in Anglo-American law is different from the kind of trial that would be familiar to someone in Asia or continental Europe. Starting with the adversarial kind of trial that we are familiar with in Anglo-American law, a plausible hypothesis is that the argumentation in the trial should fit into the type of dialogue called the persuasion dialogue. The reason is that the advocate of the contention on each side, the prosecution and the defense, has the goal of persuading the trier that its contention is true. Both contentions cannot be true. If one is true, the other is false. The trier has to decide, after being presented with the arguments on both sides, which side has fulfilled its goal of persuasion. Here there is a conflict of opinions, and the method of resolving the conflict is that of presenting the strongest possible arguments on both sides. All the right conditions are in place for the trial to be a special type of persuasion dialogue.

But of course there are other kinds of trial with different rules of procedure. In the so-called inquisitorial system of continental Europe, a judge collects the evidence, by questioning each witness individually or otherwise by collecting information. She then arrives at a decision based on the evidence collected. This type of trial would seem to be more like an inquiry, or perhaps an information-seeking dialogue of some sort. But before any

of these hypotheses can be explored and tested by examining trials, further components of systems of dialogue need to be introduced.

2.2. *Dialogue Models of Legal Argumentation*

Lodder (1999, Chapter 6) has examined some of the existing formal dialogue systems to see how each of them could be used to represent legal argumentation. The three formal systems Lodder mainly discussed are one of Mackenzie's systems that is an extension of one of Hamblin's systems, Rescher's system of dialectics, and Gordon's pleadings game.

In light of the analysis of appeal to witness testimony in Chapter 1, Lodder's sample dialogue is very interesting, because it shows how naturally the dialogue model can be fitted to defeasible legal argumentation. In fact, that is exactly what the research on defeasible legal argumentation (Prakken, 1997) had shown. Defeasible reasoning is best analyzed by the dialogue model of argumentation, in which the argument can basically be seen as a dialogue representing the reasons both for and against a claim in sequence. This is very well illustrated by the fingerprints on the knife dialogue above (from Prakken, 2005, p. 3), which shows how a claim based on an argument is defeated by a counterargument. Then this counterargument is in turn defeated, or brought into question, by a counterargument to the counterargument. One problem is how formal systems of dialogue can represent such sample legal dialogues.

In Mackenzie's DC, following the general format of the Hamblin systems of formal dialectic, there are various kinds of moves, such as the asking of a question or the making of a statement. Each move is governed by rules. Each participant has a commitment set. The rules define not only what moves are permitted, but crucially, how commitments are added or deleted from a party's commitment when she makes a particular type of move. It is fairly clear that this Hamblin type of dialogue structure does apply to legal arguments such as Lodder's Bert and Ernie dialogue quite well, in certain respects. For example, when Bert makes the statement that it was not allowed to search Tyrell, this move of making an assertion should justify the insertion of the statement made into Bert's commitment set. But then when Ernie asks for a reason to support the claim, Bert should have to fulfill the burden of proof required by the rules by responding with some sort of argument that has his prior claim as its conclusion. Similarly, when Ernie responds to Bert's argument with a counterargument, Bert has to follow the rules of DC by responding appropriately. In general outline, the Hamblin-style modeling of the sample dialogue appears to be helpful and useful, as Lodder showed. But it also leaves many crucial aspects of the sample dialogue unanalyzed. One of these aspects is, of course, the defeasible nature of the whole sequence of argumentation. It looks as if both arguments are logical inferences, based on a pair of premises combining a factual assumption with

a general rule of law. But neither argument is deductively valid. Both rules are subject to exceptions.

The system that seems best designed to capture this defeasible aspect of legal argumentation is that of Rescher (1977). In Rescher's dialogue system, there can be provisoed assertions in the form of general statements that are subject to exceptions, as well as the ordinary assertions of the Hamblin systems, called categorical assertions by Rescher. A provisoed assertion is represented by a conditional stating that one statement usually, typically, or normally obtains, provided that another statement obtains. In logic, a provisoed assertion of this sort would be called a conditional, but in the literature in computing, it is called a rule. The idea is that arguments are made up from rules that are general statements and so-called facts that are statements about particulars of a case. The rule applies to the fact, generating a conclusion via the argument created. Gordon's dialogue system uses a similar feature called conditional entailment, which is based on a rule that is open to exceptions and that can default in exceptional cases. For example (Gordon, 1995, p. 117), one rule states that someone who kills on purpose is a murderer, unless that person killed in self-defense. Normally such a rule is applicable to a case, but it can default in a dialogue, depending on how the dialogue goes. This kind of reasoning is used (Prakken, 2001b, p. 187) where "tentative conclusions are drawn on the basis of uncertain or incomplete information, which might have to be withdrawn if more information becomes available".

Following the analysis of Feteris (1999), the main argumentation in a trial can be shown to have the form of a critical discussion. The purpose of this type of dialogue is to resolve a conflict of opinions by rational argumentation. A conflict of opinions means that what one side has to prove to be successful is in conflict with what the other side must prove to be successful. In a trial, the trier (judge or jury) has the job of deciding, in the end, which side has been successful in discharging its burden of proof. Up to this point, the formal systems discussed by Lodder and Prakken and Sartor all seem to be contenders to model various important features of legal argumentation, because they primarily fit various aspects of the critical discussion. But then a new twist needs to be added. The more information the trier has about the case, the better informed the critical discussion will be. And so the success of the critical discussion in a trial, it can be argued, is dependent on the information-seeking dialogue that goes on when the witnesses are examined by both sides during the course of the trial.

One central problem is to structure witness testimony of the kind used in a trial (to consider a paradigm case) as being an orderly goal-directed procedure for arriving at the truth of a matter. Is it possible to construct an abstract model that would be useful to represent this process? It can be done if some assumptions are made. One is that the argumentation in the trial

process itself can be seen as a critical discussion format in which the two sides are presenting arguments in order to try to resolve a conflict of opinions. Another assumption is that such a critical discussion will be improved if it is based on the relevant factual information available in a case. How does such information come in? The answer is that it mainly comes in through witness testimony and through the critical examination of that witness testimony by both sides, drawing inferences from what was said (or not said). In the subsequent chapters of this book, it will be argued that this examination process can be viewed as a form of information-seeking dialogue. In this type of dialogue, the questioner (presumably) seeks information and the witness (presumably) seeks to provide that information by answering the questions. The rest of this book is dedicated to the task of building up a normative model that has rules governing how constructive argumentation should take place in this kind of dialogue.

3. Commitment Sets

Next, another notion has to be added – that of the participant’s commitment set, sometimes also called a commitment store. A commitment store is a set of propositions in a dialogue that is kept track of somehow. For example, it could be a list of statements collected in a data base – and propositions are added to it or deleted from it as the sequence of argumentation in the dialogue goes along. The idea is that at each move in a dialogue, propositions are added to the list, or deleted from it, according to the kind of move made (Hamblin, 1971, p. 136). For example, if a participant makes an assertion, then the proposition asserted is added to his or her commitment set. If a participant makes a retraction, then the proposition retracted is deleted from his or her commitment set. The concept of a commitment set was introduced by Hamblin (1970), who wrote (p. 257) that we need such a device to model the kind of case in which a speaker is obliged to maintain consistency. What we need to do, according to Hamblin (p. 257), is to “keep a store of statements representing his previous commitments, and require of each new statement that he makes that it be added without inconsistency to this store.” According to Hamblin (p. 257), the commitment set represents what he called a persona of beliefs, which need not correspond exactly to his or her actual belief, but which will “operate, in general, approximately as if it did”. The commitment set represents the acceptance of a participant, as opposed to belief. It represents what she has gone on record as accepting in a dialogue. According to the analysis of Walton and Krabbe (1995, p. 123), how commitment should be incurred or retracted in a dialogue is a function of five factors: (1) the kind of move made, (2) the type of dialogue, (3) the goal of the dialogue, (4) the speaker’s role in the dialogue, and (5) the rules of the dialogue.

TABLE 4.4. Adjustment of Commitment

Proponent	Respondent
1. Yes, I accept <i>A</i> .	But at round 3, you did not.
2. Well then, I don't accept <i>A</i> .	But you accept <i>B</i> and 'If <i>B</i> then <i>A</i> '.
3. Well then, I do accept <i>A</i> .	So you are committed to <i>A</i> now?

3.1. Retraction of Commitments

One of the biggest problems in using the commitment approach to modeling any argumentation in a dialectical system is how to deal with retraction of commitments. The inquiry type of dialogue has the property of cumulateness, meaning that once commitment to a particular proposition is incurred at any given point in the sequence of argumentation, then commitment to that proposition is not retractable at any succeeding point (Woods and Walton, 1978, 1982). The inquiry is meant to be a type of dialogue in which, ideally, retraction is never necessary. The idea behind the inquiry is that the participants collect all the data by an exhaustive search so that no new information can come in. On this basis, once a proposition has been verified, and it is known to be true (or false), then there should be no need to have to retract it, at any future point in the inquiry. The inquiry represents a search for proof or disproof of a kind that does not require retraction. The inquiry is associated with foundationalism in epistemology, and is comparable to the Aristotelian notion of demonstration (Walton, 1998, pp. 76–81).

In persuasion dialogue, however, the system must allow fairly free retraction of commitments, but not so free that a participant can retract commitment to any proposition at any given point in the sequence of a dialogue. The problem of retraction in persuasion dialogue can be illustrated by extending the dialogue sequence represented in Table 4.1, as shown in Table 4.4, which represents a typical kind of instance in which a participant's commitment or lack of commitment to a proposition needs to be resolved. A participant's commitment set does not necessarily need to be consistent in a persuasion dialogue. But if an inconsistency of commitment is challenged by the other party, the party who has been challenged needs to resolve the issue one way or the other. A participant may need to retract commitments. It is taken to be an indicator of rational argumentation in a persuasion dialogue if a participant makes a decision to retract one of a pair of inconsistent propositions she had previously been committed to, once the inconsistency of commitments has been pointed out by the other party. It is just this kind of situation that is illustrated so well in the earlier Platonic dialogues, where Socrates shows that a respondent has a set of inconsistent commitments, using his dialectical method of questioning (Robinson, 1953). It should not be judged to be against the rules in a persuasion dialogue to have a set of

commitments that is inconsistent. What needs to be contrary to the rules is for the respondent not to remove the inconsistency, once it has been clearly exposed by a questioner.

The Socratic dialogue is a kind of philosophical discussion that falls under the classification of the persuasion type of dialogue. But exactly what kind of persuasion dialogue it represents is a question treated below. A Socratic dialogue is also different from a trial in many respects. The main difference can be explained as follows. The Socratic dialogue is a leisurely exploration of a philosophical issue or conflict of opinions which examines the strongest arguments on both sides of the issue (ideally). But the discussion, in order to be successful, does not need to resolve the conflict of opinions decisively, one way or the other, by showing that one of the theses at issue is proved true and the other is proved false. The Socratic discussion can still be successful if it throws light on the issue by revealing the underlying arguments on both sides and making the participants better articulate their positions. The trial, on the other hand, is specifically designed to resolve the initial conflict of opinions by 'putting it to trial'. For this purpose, the burden of proof is set up in such a way that one side will win and the other will lose any given case. If the trial does not fulfill this goal in any given case for some reason, it is called a 'mistrial'. The argumentation in a trial may be supposed to be like that of a Socratic dialogue ideally, but perhaps because of the advocacy aspect, introduced by this win-or-lose feature, most trials are a far cry from any Socratic dialogue. To keep them from going too far in the direction of sophistry, legal systems have developed elaborate procedural rules for the conduct of trials.

3.2. *Inconsistent Commitments*

Suppose that in a dialogue like that represented in Table 4.4, a participant is committed to 'if B then A ', and is also committed to B , but then at some subsequent point in the dialogue, she decides to retract her commitment to A . What should happen in such a case? Since A follows logically from 'if B then A ' and B , it would appear that this participant is inconsistent if she retracts A , but does not retract these other two propositions from which A follows. But as Hamblin (1970, p. 263) rightly notes, consistency in a participant's commitment set should not be a universal requirement in systems of dialogue. The question is then whether the participant in this particular kind of case should be allowed to retract A . Of course, different rulings might be appropriate for different types of dialogue, but let us say the case is one of a persuasion dialogue. Should this participant be allowed the retraction or not? This question represents a fundamental choice about commitment sets that has to be made.

In some cases, in this kind of situation, the participant could, and perhaps even should, be required to resolve the apparent inconsistency of commitment. Consider, for instance, a case of examination of a witness in court.

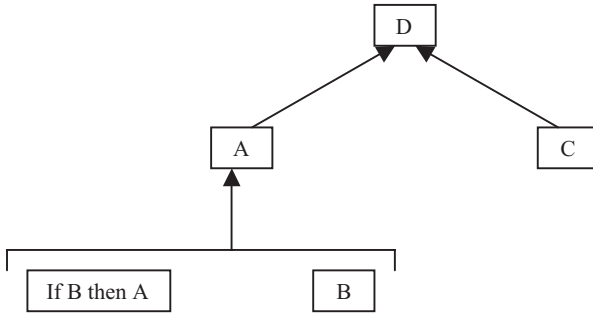


FIGURE 4.2. Argument diagram representing reasoning.

Suppose the witness has testified that both *B* and ‘if *B* then *A*’ are true, but then later, in response to questioning, claims that she is no longer committed to the truth of *A*. Or suppose that she even denies that *A* is true. The problem here is that the witness is supposed to be telling the truth. But logic tells us that it is not possible for both a proposition and its negation (denial) to be true. Here, one of the propositions has to be retracted. What is appropriate in examination of a witness would seem to be applicable to persuasion dialogue generally. An inconsistency of commitment might be present in a participant’s commitment set, and nothing might be done about it if nobody noticed it. But if challenged by a questioner who has pointed out the inconsistency, the respondent must make some kind of retraction, or somehow repair the inconsistency, restoring her commitment set at least locally.

Any attempt to answer this question needs to take into account certain important characteristics of the line of reasoning used to derive the conclusion that is the proposition to be retracted. In the case at issue, it needs to be recognized that the argument diagram for this argument would represent the argument as linked. A linked argument is one in which both (or all) premises are required to support the conclusion. By contrast, in a convergent argument either (or each) premise is an independent line of support for the conclusion. For more careful explanations of this distinction see Freeman (1991) and Walton (1996). Suppose, in a particular case, the argument diagram representing the line of reasoning used by a participant in a dialogue to prove a conclusion is represented in Figure 4.2. Suppose that the respondent retracts commitment to *D* at the first moves in the sequence of dialogue. Suppose that the argument from premises *A* and *C* is convergent. In other words, *D* follows as a conclusion from *A*, but *D* also follows, by an independent line of argument, from *C*. In such a case, if retraction is required, then the respondent must retract commitment to *A*, and also retract commitment to *C*. The reason is that either, independently of the other, can be used to prove that *D* is true. But now consider the lower level

of the argument diagram. Suppose that now the respondent has retracted commitment to *A*. What should happen next, if retraction is required? What should happen is that the respondent should retract one or the other of the pair of propositions (*B*, If *B* then *A*). The respondent must choose one or the other, and retract one. The reason is that neither proposition, independent of the other, can be used to prove that *A* is true. So if one is retracted, it is not necessary to retract the other one also. In short, no matter how retraction is dealt with in a dialogue, the line of reasoning that goes into the retracted proposition is an important factor to take into account.

3.3. *Commitment and Belief Models*

The notion of commitment in dialogue was formalized by Walton and Krabbe (1995) in different types of dialogue, but especially in persuasion dialogue. In all these approaches, commitment is taken to be different from belief. Belief, as the term is used in the belief – desire – intention (BDI) model, is taken to be an internal psychological state of a person or agent. As noted above, the problem for the BDI model is how one agent judges what the beliefs of another agent really are. In traditional philosophy, this was called the problem of other minds. The problem is that one person cannot directly tell what another person really believes. Indeed, it can even be a problem for one person to figure out what she herself really believes about some issue or subject. Commitment, unlike belief, is not private or impossible to access directly. A participant in a dialogue is committed to a proposition (statement) when she has gone on record in some public way as supporting it, or saying it is true or acceptable for her. Thus it is possible that she might be committed to a proposition she does not actually believe. In a Hamblin-style game of dialogue, each participant has a commitment set, and the commitment rules determine how additions to or deletions from that set are made. The commitment rules determine when retraction of commitment is allowed. Thus what determines commitment is not something private. It is a public set of moves (speech acts) recorded in a dialogue, and there is a set of rules governing the various kinds of moves, which specify how each type of move affects addition and deletion of commitments. Belief necessarily implies commitment, whereas commitment does not necessarily imply belief. Hence commitment is the weaker of the two notions.

One way of analyzing witness testimony as evidence is to use the BDI model. On this model, when a witness asserts statement *A*, it is implied that the witness believes that *A* is true. The problem with this model is what kind of implication holds between the assertion that *A* by the witness and the statement that *A* is true. Singh (1998, p. 40) argued that applying the BDI model has led to problems in developing agent communication languages for computing because it raises the question of how one agent can know what another agent believes. The problem is the presumption that agents “can read each other’s minds”. Because such dubious presumptions

lead to apparently insoluble metaphysical problems about knowing that one knows, or knowing what another agent believes, called iterated modalities of knowledge and belief, research in computing on agent communication languages has moved away from the belief approach and toward the commitment approach.

The analysis of legal argumentation pursued in this book in Chapter 1 adopts the commitment approach, as a way of moving forward in a manageable way, even though the truth-telling premise of the scheme for witness testimony implies that veracity of the witness is to be taken into account. For the truth-telling premise says that the witness is telling the truth as he or she knows it. The reason we can adopt the commitment approach is that the critical questions can raise doubts about whether or not the witness is telling the truth based on what the witness has said, and on other facts that are known in the case. According to the commitment approach, when a witness asserts a statement *A* in a trial, what is implied by the assertion is that she has gone on record as making a commitment to *A*. What is the warrant for the inference drawn from the assertion made by the witness to the conclusion that *A* is acceptable as a commitment? The warrant in such a case is a defeasible one. It is based on what is called a conversational policy. The conversational policy is that when a witness says that *A* is true, if she is collaboratively taking part in a dialogue, and the goal of the dialogue is to impart information that is reliable, then there is a defeasible reason, in the absence of counter-reasons, to take that assertion as a commitment that can be provisionally accepted. Following such a policy helps to make the dialogue move forward. Such a commitment is, of course, defeasible, depending on how the dialogue moves forward from that point. Suppose appropriate critical questions are asked, and they can't be answered satisfactorily by the witness. Then her assertion that *A* is true is defeated. Thus in the dialogue approach, based on commitment rather than belief, the structure of the argumentation and accompanying critical questions becomes the milieu for evaluating witness testimony as evidence.

4. Dialogue Rules and Dialectical Relevance

When you put the four fundamental notions of participant, move, sequence, and goal together, the further idea is generated that the two participants are collaborating together in making these moves so that the sequence does in fact tend to head toward the goal. Here then is the idea of collaboration. The idea of collaboration leads to another notion – the notion that the dialogue has certain rules. The rules show the participants how to collaborate with each other by following rules of procedure, sometimes also called maxims of politeness (Grice, 1975). The idea is that as long as the participants continue to follow the rules, the dialogue will progress forward toward its goal. But if either participant violates a rule, this progress may be delayed,

ruptured, or impeded. So now we have the following six components in all formal systems of dialogue: the participants, the sequence of moves, the commitment sets, the goal, collaboration, and the rules.

There are four kinds of rules in a dialogue (Walton and Krabbe, 1995, pp. 71–2). The locution rules define the permissible locutions, such as making assertions and asking questions, at each move. The dialogue (structural) rules define the order in which moves can be made by each participant. The commitment rules determine how propositions are inserted into or deleted from a participant's commitment store at each move, depending on the kind of move made. The win–loss rules determine the conditions under which a sequence of moves counts as 'winning' or 'losing' the game – that is, fulfilling the goal of the dialogue, or a failure to fulfill the goal. There are different rules for different types of dialogue, but the rules for any particular type of dialogue are determined by the other five components cited above: the participants, the sequence of moves, the commitment sets, the goal, and the concept of collaboration. The idea is that the participants must work together or collaborate in order to keep the sequence of moves flowing along toward the goal. But in order to do this, they will need to follow certain collaborative rules. One kind of rule (dialogue rule) requires that they will need to take turns, and politely let the other party speak when it is his or her turn to speak. Another kind of rule (locution rule) requires that they make the right kinds of locutions needed to keep things moving along. For example, they may need to ask questions, make assertions, or advance arguments, or all of these things, to keep the argumentation moving along toward the goal. They will need to keep track of their commitments somehow. And finally, they will need to have some concrete way of determining what counts as a fulfillment of the goal. In short, the rules are derived from the need for the participants to collaborate, at least to some degree, in order to make any progress toward the goal of the dialogue.

4.1. *Admissibility and Relevance in a Trial*

But dialectical relevance is one thing, while relevance and admissibility in a legal system are quite different things. How could such abstract sets of relatively simple rules defining dialectical relevance generally be applied to argumentation in a trial in some legal jurisdiction, in some type of court or other, where there will be an elaborate and complex set of rules governing all stages of the procedure? The answer is that they cannot be, at least directly. Something else has to intervene. What has to intervene is the notion that in any real case of a legal trial, that trial will take place in an institutional framework, in a court system which has rules binding on that court in that jurisdiction in that legal system. Such rules differ from court to court, from country to country, and from state to state. To match the normative model to any actual court case, the specific institutional setting of the case has to be taken into account. This includes not only the rules of procedure and

evidence appropriate for a specific court and for a trial in that court, but also the function of that court in a legal system.

Take, for example, the notion of relevance of argumentation. An argument is judged to be relevant in a dialogue if it appears, at any given point in a dialogue, that it can be used in the projected sequence of argumentation in the dialogue in such a way that it contributes to the goal of the dialogue. In a trial, the judge must rule on relevance, but an attorney may sometimes plead that she can show how an argument is relevant if she can be allowed to progress a little further with her line of reasoning. And in theory, that is how relevance is proved or refuted in a dialogue. The party who claims relevance must extrapolate her line of reasoning forward in the dialogue, so it can be seen to move toward contributing to the resolution of the conflict of opinions that is at issue. But the problem with determining legal relevance of argumentation in any particular trial is that specific legal rules must be applied, depending on where the case is being tried and in what kind of court. In the U.S. Federal Rules of Evidence, relevance is defined after Wigmore's fashion, in terms of the projected probative weight of an argument. According to Federal Rule 401, 'relevant evidence' means "evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence" (FRE, 2006). The term 'probable' refers to probative weight. The term 'action' refers to the thesis at issue in the case. The rule does not require or permit an assessment of probative value beyond the requirement that evidence has some tendency to make a fact of consequence more or less probable. The rules make it clear that all relevant evidence is presumptively admissible, and that evidence which is not relevant is not admissible.

The other rules regulating use and admissibility identify circumstances in which evidence that is admittedly relevant may be excluded or its use limited on the grounds that it is unfairly prejudicial or that extrinsic policies justify its exclusion. The basic view is expressed in Rule 403.

Rule 403. Exclusion of Relevant Evidence on Grounds of Prejudice, Confusion, or Waste of Time. Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.

Discussions of how the rules pertaining to relevance in the FRE relate to some underlying notion of logical relevance can be found in Callen (2003) and Walton (2004, Chapter 8).

In any legal system, in addition to considerations of logical relevance, there may be additional considerations of admissibility of evidence that may vary from court to court, but that will affect what is considered relevant, or judged to be admissible in a given case. Generally, in Anglo-American

common law, an accused person's previous convictions will be held to be irrelevant (Gee and Mason, 1990, p. 59). This may seem to be illogical, for example to a medical person, who is used to reasoning from similar fact evidence. For example, if a person suffers from rhinitis due to pollen in spring, and then suffers from rhinitis in a dusty environment, even if it does not contain pollen, the second case of rhinitis may also be ascribed to an allergic reaction (p. 59). Why then should an accused person's past convictions be irrelevant? The answer is that it is not logically irrelevant, but is held to be legally irrelevant for the reason that it might tend to prejudice a jury. It should be noted parenthetically here that such evidence is not always held to be legally irrelevant. For example (Gee and Mason, 1990, p. 60), if a particular murder has unusual features, such as some form of mutilation of the body, then prior convictions having this same feature of mutilation could be relevant as evidence of guilt in the new case.

What is shown here then is that relevance in an abstract normative model of dialogue, such as that of a persuasion dialogue, is one thing, while what is considered relevant or admissible as an argument in any real trial is something else again. While the abstract normative concept of relevance may model the basic idea of legal relevance of argumentation in a trial, there should be no quick logical leap from the one determination to the other. What has to intervene is the specific setting and court framework of the trial. It has to be realized that there will be specific legal rules, such as the Federal Rules of Evidence, that will overlay, and have to be added to, the abstract logical rules of the normative model of dialogue. Applying a general set of rules defining relevance to disputes about relevance in particular legal cases at trial has to be carried out in light of not only the goals of a type of trial but also practical factors such as costs.

We see then that dialectical relevance is one thing, and rulings on relevance in any particular legal case are something else. Nevertheless, it is clear that the first step in ever gaining any systematic understanding of legal relevance as it relates to the examination of witness testimony in a trial setting is to start with dialectical relevance. There is a school of thought, however, that thinks that logical relevance and legal relevance are entirely separate and that you cannot learn anything about the one by studying the other.⁶ This book will proceed on the opposite assumption, namely that the best way to come to understand legal relevance is to base it on dialectical relevance, studying the two concepts side by side. Even though dialectical relevance is

⁶ The historical background literature that led to recent attempts to define relevance of a kind suitable for the FRE has been surveyed in volume 1A of Wigmore's treatise, *Evidence in Trials at Common Law*, pp. 1004–95. The 1983 edition (volume 1a of *Wigmore on Evidence* edited by Peter Tillers) contains helpful explanations of how Wigmore's views became the basis of the approach to relevance in the FRE. There is also a helpful discussion summarizing the doubts that have been expressed about basing legal relevance on some notion of logical relevance.

a structural concept that only applies to normative models of dialogue in the abstract, and legal relevance is embedded in actual rules of law, coming to understand the one concept by relating it to the other is actually the best route toward understanding both.

5. Persuasion Dialogue

In the special type of dialogue called the persuasion dialogue, at least one participant has a so-called thesis, which is a particular proposition designated at the opening stage of the dialogue. The participant who has such a thesis is assigned the task of proving it by using argumentation that is, or should be, acceptable to the other party. The party with the assigned thesis then has a so-called obligation (or burden of proof), meaning that she is successful in the dialogue if she proves the thesis to the other party, according to the rules. In a symmetrical persuasion dialogue, both parties have theses to be proved. For either participant to be successful in a symmetrical persuasion dialogue, that participant has to prove his or her own thesis, and *ipso facto*, to disprove (strongly refute) the other party's thesis (Walton, 1989). For the one thesis is the opposite (contradictory) of the other. In an asymmetrical persuasion dialogue, the roles of the two parties are different (Walton, 1989, p. 5). The proponent, to successfully fulfill her goal, has to prove her thesis. The respondent, to successfully fulfill his goal, has only to throw doubt on the proponent's attempt to prove her designated thesis. In other words, the respondent has a lighter or easier goal to fulfill than the proponent. All he has to show, to win the dialogue, is that the proponent's attempts to prove her own designated thesis are too weak to have been successful. This asymmetrical feature is embodied in the unequal distribution of burden of proof in the criminal trial (Prakken, 1991).

Another characteristic of the persuasion dialogue cited in Walton (1984) relates to the premises that need to be used by a participant in an argument that is probatively useful for the purpose of persuading the other party to accept a proposition. Each party needs to prove his or her thesis by using as premises only propositions that are commitments of the other party. This requirement is not as strong as it initially sounds. What it means is that the participant needs to use premises that the other party is already committed to, or if not, then premises that he or she can be brought to accept in the subsequent dialogue. Each participant in the symmetrical type of persuasion dialogue has the same goal – to construct a sequence of argumentation based only on premises that are commitments of the other party, such that each subargument in the chain is structurally correct. The ultimate conclusion, the last proposition in the sequence, is supposed to be the other participant's thesis. The aim of the proponent, for example, is to get the respondent committed to a set of propositions that can be used as premises in an argument that has the proponent's thesis as conclusion. In an asymmetrical

persuasion dialogue, the aim of the respondent is to raise doubts about the success of this attempt by finding criticisms that undercut the basis of the proponent's argument. This can be done just by asking questions, as opposed to venturing positive arguments to prove one's own claims.

Why is this type of dialogue named 'persuasion dialogue'? Somehow this label seems psychological. But it is not meant to be, in any deep sense. For it needs to be recalled that commitment in the Hamblin sense does not refer to actual (psychological) belief. It refers only to what the participant in the dialogue has gone on record as accepting, or what follows from such acceptance by the rules of the dialogue and the moves made in it. The term 'persuasion' in this sense refers to a kind of commitment-based rational persuasion within the framework of a dialogue and the moves made therein. The goal of the proponent is to get the other respondent to become committed to a proposition that he was not committed to before, by using arguments based on his commitments. This probative movement from a participant's initial lack of commitment to a subsequent commitment to a designated proposition represents the transition that models the idea of rational persuasion. But as Hamblin (1970, p. 264) made clear, it is not psychological persuasion or a person's actual change of beliefs that is modeled. The psychological notion of actual belief change in an audience is the concept of persuasion appropriate for rhetoric. The notion of rational persuasion appropriate for dialectic is different. It represents what you are accountable for once you have agreed to take part in a certain type of dialogue and have made argumentation moves in that dialogue that have consequences, according to the rules of the dialogue. It represents what you should be accountable for, or answer to, as a collaboratively rational participant in a dialogue. What, in a psychological sense, you actually believe, might be something quite different.

5.1. *Critical Discussion*

The best known subtype of persuasion dialogue is the critical discussion. According to van Eemeren and Grootendorst (1984, p. 34), the purpose of the critical discussion is to resolve a conflict of opinions by means of rational argumentation. According to van Eemeren and Grootendorst (1984, pp. 85–6), there are four stages in a critical discussion.

At the confrontation stage (p. 85), a dispute arises where the one participant advances a 'point of view', and the other participant casts doubt on that point of view, or advances an opposed point of view. A point of view is a proposition (thesis) and an attitude (pro or contra) with respect to that proposition (van Eemeren and Grootendorst, 1992, p. 15). At the opening stage, the two parties agree to attempt to resolve the dispute by expressing opposed points of view and undertake to resolve the conflict by advancing opposed rational arguments. During the argumentation stage, each side

brings forward arguments to support its own point of view, and each takes turns questioning and criticizing the arguments put forward by the other side. The question of whether the dispute has been resolved is addressed at the closing stage of the critical discussion.

Following are the ten dialogue rules that govern all moves made by both participants during the argumentation stage. This set of rules can be found in van Eemeren and Grootendorst (1992, pp. 208–9) and also in van Eemeren and Grootendorst (1987, pp. 284–91). The version quoted below is from the latter source.

Rules for a Critical Discussion

Rule 1: Parties must not prevent each other from advancing or casting doubt on standpoints (p. 284).

Rule 2: Whoever advances a standpoint is obliged to defend it if asked to do so (p. 285).

Rule 3: An attack on a standpoint must relate to the standpoint that has really been advanced by the protagonist (p. 286).

Rule 4: A standpoint may be defended only by advancing argumentation relating to that standpoint (p. 286).

Rule 5: A person can be held to the premises he leaves implicit (p. 287).

Rule 6: A standpoint must be regarded as conclusively defended if the defense takes place by means of the common starting points (p. 288).

Rule 7: A standpoint must be regarded as conclusively defended if the defense takes place by means of arguments in which a commonly accepted scheme of argumentation is correctly applied (p. 289).

Rule 8: The arguments used in a discursive text must be valid or capable of being validated by the explicitization of one or more unexpressed premises (p. 290).

Rule 9: A failed defense must result in the protagonist withdrawing his standpoint and a successful defense must result in the antagonist withdrawing his doubt about the standpoint (p. 291).

Rule 10: Formulations must be neither puzzlingly vague nor confusingly ambiguous and must be interpreted as accurately as possible.

According to van Eemeren and Grootendorst (1984, p. 86), a successful critical discussion ends with the resolution of the initial conflict of opinions, which shows that one party was successful while the other was not. Unless the conflict is resolved, according to van Eemeren and Grootendorst (1984, p. 86), “it is unclear whether the discussion has had any point”. In short, a successful critical discussion must achieve closure by resolving the original conflict of opinions in favor of the one side or the other.

The critical discussion is a regulated system of dialogue that has a clearly defined goal and a definite set of rules governing the moves required to successfully attain that goal. But the rules are open to various interpretations and are not defined in a formalistic way. Therefore, the critical discussion is not straightforwardly expressible as a formal structure of dialogue in the sense of Hamblin (1970, 1971). Although the concept of relevance, expressed in the phrase “argumentation relating to a standpoint”, used in Rules 3 and 4, could be defined in a formal way, other notions, such as defining when an expression is “puzzlingly vague” or “confusingly ambiguous”, cannot easily be defined in any exact way. Despite the lack of formal structure, it is evident from the goals and rules of the critical discussion that it fits the model of the persuasion dialogue system.

The Socratic type of dialogue is evidently not a critical discussion. The reason is that the Socratic dialogue can be regarded as successful even if the original conflict of opinions is not resolved decisively, one way or the other, by the end of the dialogue. What happens in a typical Socratic dialogue is that the dialogue turns out to be revealing by throwing light on the viewpoints argued by both sides, even though the philosophical question discussed in the dialogue, such as “Can virtue be taught?” is not resolved, one way or the other. But by showing strong argumentation on both sides, the dialogue may perform a maieutic function, meaning that it refines the positions on both sides and articulates the issue more clearly. Both sides find their positions are not defensible, as they stand (or stood, before the dialogue), and they need to add qualifications, even admitting that the other side has something to be said for it. In short, the critical discussion is not the only kind of persuasion dialogue and is best seen as one subtype of persuasion dialogue.

How should the argumentation in a trial be analyzed? What should be said is that the trial does basically fit the model of the critical discussion type of dialogue, because the purpose of a trial is to resolve the initial conflict of opinions (Feteris, 1999). The method of the trial is basically that of the critical discussion, which is to give both parties the freedom and incentive to bring forward their best possible arguments, and then see who builds the strongest case. The trial is a form of critical discussion, at least up to a point. Where the trial diverges from the critical discussion is in all the specific, localized special legal rules of procedure that fit the particular context of court and case. So, for example, an argument that would be judged relevant in a critical discussion may be judged irrelevant in a trial, because it fails to meet some specific exclusionary rule of relevance applicable to a particular court. The other failure to fit here is that a formal model of the critical discussion as a type of persuasion dialogue needs to be constructed. We have formal models of different types of persuasion dialogue (Walton and Krabbe, 1995), but no formal model of the critical discussion. Such a lack may not be too hard to remedy, however. The critical discussion can be modeled as simply a special subtype of persuasion dialogue in which the

goal is to resolve the initial conflict of opinions. The biggest problem is to formally define relevance, as the central concept of the critical discussion, and the persuasion dialogue generally. In Section 2 above, it has already been shown how it is possible to carry out this project.

6. Profiles of Dialogue

One of the biggest remaining questions is how to apply systems of dialogue, which are abstract structural models of how a dialogue should ideally proceed, to actual cases of a text of discourse in which argumentation exists. There are two problems. One is that there can be a lot of ambiguity and lack of evidence about what the argument is, what the premises and conclusions are, and what type of dialogue the participants are supposed to be engaged in, in a given case. The other is that the system of dialogue is both complex and abstract, so there may be far too much structural and mathematical detail to mobilize all the rules of the applicable system. What needs to be done is to single out the localized aspects of the argument or argument move that is the target of evaluation and then use the bit of dialogue machinery that reveals the necessary structure to aid in the evaluation. In other words, the dialectical evaluation of a case is contextual. The dialogue structure is a useful tool, but it does not provide an algorithm for calculating the outcome of an evaluation of the kind one is familiar with in deductive logic. Still, by showing how a sequence of moves needs to be connected together in an orderly way to contribute to a collaborative goal, a system of dialogue can be useful as a normative model of how a reasonable argument should look.

When you put fundamental notions of the participants and the identification of single moves (speech acts) together, after the fashion constructed by Hamblin, you get an orderly sequence of moves. A representation of such a sequence, used to model a sequence of argumentation in a given case, is called a profile of dialogue in Walton (1989, p. 67). A profile of dialogue is a local sequence of moves in a dialogue which shows how the dialogue ought to have gone for it to conform to the requirements of the type of dialogue that the participants are supposedly engaging in. The profile of dialogue can take the same form as the dialogue tableau of the kind represented in Figure 4.1 and Table 4.1. It is the same kind of connected sequence, but it is not a sequence of moves in a formal system of dialogue. It is a natural language sequence of argumentation, but it conforms to some of the requirements of some formal system of dialogue, and thereby shows how the sequence of argumentation ought (ideally, or normatively) to have gone in that case. By applying the profile of dialogue to the actual case, and comparing it to what actually (or evidently) took place in the case, an evaluation of how the argumentation in the case fell short in a certain respect can be assisted. The profile, in other words, shows how things should have gone ideally.

TABLE 4.5. Proper Order of Questioning Profile

Proponent	Respondent
1. Did you have a gun?	Yes.
2. Did you hide that gun?	Yes.
3. Where did you hide the gun?	In the hollow tree.

For instance, suppose that in a criminal investigation the suspect is asked the question, “Where did you hide the gun?” A profile of dialogue can be reconstructed from the given case in which there should be a prior move in the dialogue sequence in which the suspect admitted that he hid the gun in question. The profile labeled Table 4.5 could represent such a profile of dialogue. A profile, such as Table 4.5, needs to contain prior moves in which the suspect made the right kind of previous commitments. What is required to be shown in a given case, in order to establish the legitimacy of asking the question, “Where did you hide the gun?” is that the context of the case fits the dialogue requirements displayed in the profile. The profile of dialogue is a tool used to map an abstract normative model of dialogue onto the specifics of a given case. At any rate, enough has been shown to indicate how even the basic components (1) and (2) above yield structural tools that are useful in studying fallacies and particular cases of dialogue argumentation.

The profile of dialogue is useful as a tool for the analysis and evaluation of argumentation in cases of cross examination of a witness in a trial. So-called leading questions may be defined as questions that are used, like an argument, to contain a line of reasoning that moves forward probatively toward a particular conclusion. The method of profiles of dialogue can be used to analyze a question used in a trial, for example in a case of cross examination of a witness, to show exactly why the question is a leading question, and to show where it is leading in a dialogue. Evaluating such cases depends on a determination of the commitment sets of the proponent and respondent, which is in turn determined by the previous moves made by the two parties in the sequence of dialogue.

In information-seeking dialogue, the respondent needs to be seen not only as having a regular commitment set, of the same kind that a participant in a persuasion dialogue, or any other type of dialogue, would have. A respondent in an information-seeking dialogue also needs to be seen as having a special set of commitments that represent information he is presumed to have access to. This set of propositions could be called the data base, or perhaps the knowledge base, of the respondent. The proponent does not know exactly what is in this knowledge base, but she may have some idea of what is in there. The proponent wants to get certain information. She has reason to think she can get it from this data base. Her problem then is to try

to elicit that information from the respondent. In many cases, as we have so often emphasized in peirastic dialogue, this problem has a dual aspect. The proponent not only wants to know whether a particular proposition is in the data base. She may also want to know whether that proposition is really true or not. The usual way to find out is to ask a question, or more likely, a series of questions. The collaborative conversational policy is that the respondent will help in this process. That is, he will give the desired information if he has it in his data base, as soon as he is prompted in the right way to do so by the asking of the right questions. The asking of a series of questions for the purpose of finding some designated information in such a dialogue can be called searching. Searching is a form of action. But in an information-seeking dialogue, searching is a speech act. It is not typically a single or simple act of asking a question, but a process that takes place over an extended sequence of questioning and replying in a dialogue. This process can be modeled in any given case of information-seeking dialogue by a profile of dialogue.

The profiles of dialogue method is also one of the tools used to determine the relevance of argumentation in a given case. The other method is the extrapolation of the line of reasoning forward in a given case to judge whether the line of reasoning advanced so far in the dialogue is moving toward the goal the argument is supposed to be contributing to in the dialogue. These two methods together are the basis for determining relevance in a given case. Of course, what else needs to be known, to determine relevance in a case, is the type of dialogue the argumentation in the case is supposed to be part of, and in a legal case, the special institutional framework of the case. Arguments can be judged prospectively or retrospectively, in a given case. If the argumentation stage of the dialogue in a case has been closed off, a retrospective evaluation of the relevance of any particular argument used at some point in the sequence of dialogue is possible. This can be done by examining the transcript of the dialogue and then situating the particular argument in question in relation to the ultimate thesis that is to be proved in the persuasion dialogue. Or if it is a type of dialogue other than persuasion, the argument must be situated in relation to how it progresses toward the goal of the dialogue. This approach makes a retrospective judgment of relevance often fairly easy, especially if an actual transcript of the argumentation sequence in the whole dialogue exists. As Wigmore's analyses of legal cases showed, an argument diagram can be used to keep track of the line of reasoning on one side of a whole case.⁷ The diagram shows that

⁷ There is a complex theoretical point involved here concerning the limitations of box and arrow diagrams for representing dialectical features of argumentation. Some dialectical features, such as an indication in the node of the diagram identifying its owner, or which side put forth the argument, can be included in an argument diagram. But many dialectical features, such as the representation of critical questions, cannot be represented on a box and arrow

each single step of inference used in the single arguments of a proponent or respondent in the case is linked up to each other single step of inference, displaying the extended line of reasoning in the whole body of evidence presented on that side of the case.⁸ With the aid of such an argument diagram, the job of evaluating an argument for retrospective relevance is made much easier. Making a prospective evaluation of relevance is generally much more difficult, because it is hard or even impossible to predict, in advance, which ways the lines of reasoning in a case might go. What the judge has to do in such a case is to make a conjecture, based on her knowledge of the ultimate conclusion that is supposed to be proved in the dialogue (the end point or goal). The judge carries out the conjecture by extrapolating the line of reasoning forward hypothetically to see whether it can go from the given point in the dialogue to that ultimate end point.

7. Multiagent Systems

In Section 1, no requirements were set down defining a participant. A participant was taken simply as the entity that makes the moves in a dialogue and is the holder of the commitment sets. So far, formal systems of dialogue have not developed the concept of the participant any further. But there are reasons for enriching the concept of a participant in certain directions. One of these reasons is that many kinds of argumentation depend on what is called the arguer's credibility. In cross-examination of a witness, for example, impeachment may be used to attack the credibility of the witness and thereby to throw doubt on the reliability of his testimony. How such an attack on credibility works is that we normally assume in different types of dialogue that the participants are collaborating by following the cooperative rules of the dialogue. For example, we assume that a witness is being honest. But if doubts about the credibility of a participant in a dialogue are raised, and the trier or audience bestows a lower credibility on that participant, then there will be a resultant lowering of the weight of probability assigned to that participant's argumentation. In order to make sense out of how this kind of credibility-based argumentation works, it is necessary to think of a participant in a dialogue as having certain qualities of character, such as honesty (character for veracity) and sincerity (really meaning what you say). But introducing such qualities of character into the concept of the participant in a dialogue is a further extension of the structure of the dialogue.

diagram, where the notes represent propositions, in any straightforward way. There will be a discussion of how current systems cope with such limitations in Chapter 7.

⁸ How such a diagram can be used to model argumentation in a more dialectical way was shown by Hage (1997, p. 24). It has been shown how the Wigmore evidential diagram technique can be automated by a software system that aids argument diagramming (Prakken, Reed, and Walton, 2003).

How can the concept of the participant be enriched to accommodate such an extension? The best way to proceed is indicated by recent developments in computer science, in a new field called multiagent systems. Following this direction, a participant is seen as what is called an ‘agent’. An agent, according to the definition given by Franklin and Graesser (1996, p. 22), is an entity that has three basic characteristics. First, it can perform autonomous execution of actions. Second, it can perceive its environment, including the effects of its own actions, through sensors. Third, it can modify its actions in view of what it sees. A fourth characteristic (p. 22) is that an agent is an entity that has goals, and that bases its actions on its goals. But an agent can interact not only with its natural environment, but also with other agents. Another characteristic of an agent (Franklin and Graesser, 1996, p. 23) is that an agent can “engage in dialogs and negotiate and coordinate transfers of information” with another agent. Yet another characteristic of an agent, according to Wooldridge and Jennings (1995, pp. 116–17), is that an agent can have several kinds of properties (p. 117) that stay with it over extended sequences of actions, including the following three characteristics. Veracity means that an agent will not knowingly communicate false information. Benevolence means that an agent will do what is asked, and not have conflicting goals. Rationality means that an agent will act in order to achieve its goals, and not prevent its goals from being achieved (in line with its beliefs about these matters). The basic idea is that agents have certain stable qualities of character that persist over a long sequence of actions or dialogue exchanges, and these characteristics enable them to collaborate with other agents to get things done. They can be called rational agents, in the sense that they choose to perform actions based on their goals and on the information they possess that they take to represent beliefs about the world (Wooldridge, 2000, p. 1).

7.1. *Reputation Management in Multiagent Systems*

Evaluating communications based on the perceived reputation and sincerity of the arguer has now become a concern in multiagent computing. An agent collects information and can also carry out actions based on the presumed reliability of the information, but making such a judgment is often based on the trustworthiness of the agent offering the information. Often what is required is a capability to produce accurate referrals on the credibility of a source of information. The technology is based on what is called reputation management (Yu and Singh, 2000). Recent research on multiagent systems has shown that trust is a fundamental component of distributed systems. A survey of the state of the art of reputation management systems and other computing systems based on the notion of trust has been provided by Ramchurn, Huyn, and Jennings (2004). The trust models that have been developed enable agents to calculate the amount of trust they can place in a dialogue partner (p. 3). Such evaluations of degrees of trust are important

for an agent in choosing which other agent should be its dialogue partner, and also how it should react in dialogues with this partner over multiple interactions (p. 3). Many of the systems that have been developed illustrate the evolution of trust and cooperation over multiple interactions of the kind that could be used to explain problems related to the prisoner's dilemma (p. 5). So-called nice agents respond in a cooperative way, but later on in a sequence of dialogue interactions, agents can learn to use a more suspicious approach to minimize their losses. In other words, an agent learns to respond with nice moves to the previous nice moves of the other agent, whereas if an agent encounters nasty (non-nice) moves used by an exploitive agent, it can learn to reciprocate by being more suspicious, or using nasty moves itself. The evolution of such strategies depends on the ability of the agent to ascribe a rating to the level of performance of another agent with whom it is engaged in dialogue. Such a trust rating can be based not only on dialogue interactions with another agent but also on evaluation of dialogues with other agents in the same system who might pass on their experience with that agent (p. 8).

Yu and Singh (2002) base agent reputation evaluations on the use of referrals, pointers to other sources of information that a search engine would find on a web page. They provide techniques together such as information through a network. Castelfranchi and Falcone (2000) have developed a cognitive view of trust in multiagent systems based on a belief model. They are concerned with task delegation where one agent wishes to delegate a task to another and needs therefore to evaluate the trust it can place in the other agent by considering the different beliefs it has about the intentions of that agent. They consider beliefs about compliance, willingness, persistence, and motivation. Each type of belief can impact trust. Other kinds of protocols constructed in the AI literature aim to prevent agents from lying, for example, about the quality of goods sold, or about prices for a transaction (Ramchurn et al., 2004, p. 13). Some of these systems enforce truth-telling on the part of an auctioneer, since the bids are public, while others do not ensure that the bidders reveal their true valuation of goods that are the subject of negotiations. For the purpose of evaluating witness testimony as evidence, truth cannot be enforced. Thus argumentation can be useful as a source of methods, because it has studied ways of evaluating credibility.

The three kinds of models most often used to evaluate trust in multiagent systems are the social cognitive models, the reputation models, and the evolutionary and learning models (Ramchurn et al., 2004, p. 20). One open issue in the development of all three kinds of systems is that of strategic lying (p. 22). Most models do not give a deep treatment of strategic lying (p. 22). Strategic lying is a device aimed at tricking agents into believing the liar trustworthy, thus allowing the liar to exploit an unaware agent.

8. Dishonesty and Character Attack

In a dialogue each participant will presume that the other has certain character qualities such as veracity or benevolence, and communication will often depend on these presumptions being in place. But if there is evidence that a participant in a dialogue lacks one of the characteristics, it will affect how the other participant reacts. The characteristics that are especially important in dialogues are those that pertain to the collaborative qualities of sincerity and trustworthiness presumed in the cooperative conversational exchanges described by Grice (1975). For example, suppose a participant becomes committed to a proposition and then later retracts that commitment, or even becomes committed to an opposed proposition. And suppose, as in the kind of dialogue considered above in Section 3, she refuses to retract either commitment, even after the other party has clearly revealed the inconsistency. We can easily imagine such a sequence of dialogue without writing out a lengthy example. The profile of dialogue in such a case would constitute evidence of insincerity in the character of the party who was challenged. Insincerity of this kind is an important character fault in a critical discussion. What it means is that the participant is not collaboratively taking part in the discussion. She is not helping to move the dialogue along toward its goal of resolving the initial conflict of opinions by rational argumentation. She is, in fact, providing an obstacle to the realization of that goal. Such problems can shut down a dialogue, and may require a third party to intervene in order to keep the argumentation on track.

Much needs to be done to deal with this kind of problem. First of all, it needs to be conceded that real cases of witness examination dialogue can be highly eristic and involve all kinds of strategies of attack and defence. But this adversarial aspect of witness examination discourse needs to be put in a context. If you look at the trial as a whole process, from the trier's point of view, what is vital is that the trier should be presented with the strongest possible arguments on both sides. In order for this to occur, the relevant factual information about the case, in the form of evidence, especially from witness testimony, must also be presented to the trier. But the problem, in a typical case, is that it is not clear what the facts really are. Much, inevitably, is contestable. The trier must make up its own mind, based on the questioning of the witnesses by both sides. The trier must extract the information, or what is presumed to be the information, based on the questioning of the witness. And so ideally, for the trial to work, it must be based on argumentation using premises that arguably represent the presumed facts of the case. Otherwise the whole idea of a fair trial falls to the ground (or so it will be argued in this book). The trial, it will be argued, cannot be seen as just a purely eristic contest between the two sides – a kind of 'bear pit'. It must have an overarching normative framework within which the argumentation can be

channeled usefully toward revealing the real facts of the case. Of course, in many cases a trial may fail to do this. Or, at best, it may do so imperfectly, subject to all kinds of human failures. But it will be argued throughout the rest of this book that unless the argumentation in a trial is seen as having an overarching normative goal of this sort, it becomes mere negotiation. Or even worse, it becomes a purely adversarial quarrel in which fallacies and verbal dirty tricks are acceptable. This consequence is not good. It will be argued in subsequent chapters that the rules of evidence indicate that this view of the trial process is not the one that Anglo-American law should be based on.

In Chapter 1, Section 3, it was shown how one of the most important ways of casting doubt on witness testimony is to attack the character of the person testifying. Three kinds of *ad hominem* argument were recognized: the direct type, the circumstantial type, and the bias type. All three types of *ad hominem* argument were shown to be reasonable in many instances, for example, in cross-examining a witness in a trial, even though the *ad hominem* type of argument generally is categorized as a fallacy in logic.

Informal fallacies are types of arguments that appear correct or persuasive, but are logically faulty (Hamblin, 1970). The traditional approach to fallacies in the logic textbooks has emphasized the negative aspect, understandably, by condemning the types of argumentation associated with fallacies as being universally incorrect. But as more recent textbooks increasingly recognize, the same type of argument that is fallacious in one case can sometimes be used in a nonfallacious way in another case. An excellent case in point is that of legal argumentation, where many of the so-called fallacious types of argumentation are recognized, within certain conditions, as being reasonable arguments of the kind that are admissible and relevant as legal evidence. The *ad hominem* argument, or use of personal attack on an opponent's character to discredit that opponent's argument, is an example. While traditionally dismissed as a fallacy in logic textbooks, this type of argument is considered admissible and relevant, in some cases, under the right conditions, most notably in legal argumentation. Hence legal argumentation is an important source of data for the study of how to evaluate arguments of the kind associated with the traditional informal fallacies. According to Saunders (1993, p. 344), opinions from a wide variety of courts have included discussions of informal fallacies in briefs, testimony, and other opinions.

The need to consider reputation in referrals suggests that qualities of trustworthiness and sincerity of a source of information are as important in computing as they are in law. As shown in Chapter 1, *argumentum ad hominem* not only is relevant in many cases of legal argumentation, but can be vitally important in a case. Relevant critical questioning in cases of witness testimony can include questions of whether the witness is honest. The character of the witness can even be a relevant subject for questioning in some instances, even if rules of evidence draw careful lines around

the use of this form of argumentation in a trial. In light of these realities, what appears to be indicated is a move toward a richer model of rational argumentation than that accepted in traditional deductive logic.

A systematic study of examination dialogue provides a useful approach to dealing with this kind of problem. Detection of strategic lying can be achieved through examination methods of questioning an agent using the previous commitments of the agent, either by revealing contradictions in testimony, or by reconstructing previous moves in a dialogue to show that they collectively represent an implausible story. The evaluation of witness testimony by detection of strategic lying can best be carried out by employing methods based on testing of a story by probing into it critically.

9. Burden of Proof

Burden of proof depends on the type of dialogue one is engaged in. In the dispute type of dialogue, the proponent has a particular proposition *A* as his or her designated thesis to be proved, while the respondent's goal is to prove the opposite (negation) of *A*. In the dissent type of dialogue, the proponent's goal is once again to prove *A*, but the respondent's goal is to cast doubt on this attempt by means of critically questioning her arguments. Another factor in burden of proof is how strong an argument has to be in order for the proponent to successfully prove his or her thesis. Farley and Freeman (1996, p. 160) defined five levels of support: scintilla of evidence, preponderance of the evidence, dialectical validity, beyond a reasonable doubt, and beyond a doubt.

Lodder (1999) set out the general rule for distributing burden of proof between the two parties in a dialogue: whoever advances a standpoint is obliged to defend it if asked to do so. This means that the pleader for a thesis incurs a burden of proof with respect to offering argumentation sufficient to prove that proposition. This is called the ordinary default rule in law: the pleader generally has the burden of proof. As shown in the West case, just below, the default rule is subject to exceptions. There is another implication to this rule. If doubts about his or her attempts to prove are raised by the asking of critical questions of the other party in the dialogue, the proponent must either respond to these doubts appropriately or retract the proposition previously put forward as a commitment.

Wigmore (1940, p. 270) drew a distinction between two meanings of burden of proof. The first one is called risk of nonpersuasion. Wigmore offered the following example (p. 271) from "practical affairs". Suppose *A* has a property and wants to persuade *M* to invest money in it, while *B* is opposed to *M*'s investing money in it. *A* will have the burden of persuasion, because unless he persuades *M* "up to the point of action", *A* will fail and *B* will win. Wigmore then went on to show that the burden of persuasion works in litigation in a way similar to that in practical affairs, except that the prerequisites

are determined by law (p. 273), and the law divides the procedure into stages (p. 274). The second meaning is called the burden of production. It refers to the quantity of evidence that the judge is satisfied with to be considered by the jury as a reasonable basis for making the verdict (p. 279). If this is not fulfilled, the party in default loses the trial (p. 279). According to Wigmore (p. 284), the practical distinction between these two meanings of burden of proof is this: "The risk of non-persuasion operates when the case has come into the hands of the jury, while the duty of producing evidence implies a liability to a ruling by the judge disposing of the issue without leaving the question open to the jury's deliberations." Wigmore presented a number of good examples, and went on to discuss shifting of the burden of proof (p. 285). He says that the risk of nonpersuasion never shifts, but the duty of producing evidence to satisfy the judge does have this characteristic often referred to as a shifting (pp. 285–6).

McCormick (Strong, 1992, p. 425) cited what appears to be the same distinction, contrasting the burden of producing evidence and the burden of persuasion. He describes the first as follows: "The burden of producing evidence on an issue means the liability to an adverse ruling (generally a finding or directed verdict) if evidence on the issue has not been produced" (p. 425). The burden of persuasion (p. 426) means that if the party having that burden has failed to satisfy it, the issue is to be decided against that party.

Park et al. (p. 88) cited two meanings of burden of proof – burden of persuasion and burden of production. They say that the burden of production involves two things – the amount of evidence required to establish the ultimate question of fact, and the allocation of the risk of nonpersuasion to that degree. The burden of persuasion (p. 89) defines the degree to which the fact-finder must be persuaded in order for the ultimate claim to be proved, and which party must meet that burden. There are various degrees, such as 'more likely than not' and 'beyond reasonable doubt'.

Here we mention two cases of legal disputes about burden of proof, an easy one and a hard one. The easy case, ruled on by the U.S. Supreme Court in October, 2005, began with a suit in a lower court (*Weast v. Schaffer*, 41 IDEL 176, 4th Cir. 2004) in which the parents of a disabled child, Brian Weast, sought reimbursement for private school tuition. Their argument, based on the Individuals with Disabilities Education Act requiring school districts to create individual education programs for each disabled child, was that that the program provided by their school district was inappropriate for his needs. The parents claimed that the district had the burden of proving that their program was appropriate, while the district held that the burden was on the parents to prove it was not. When the case went to the Supreme Court, the normal default rule was acknowledged, but the parents argued that school districts have a natural advantage in information and expertise, raising an exception to the rule. The Court ruled, however, that

the exception did not apply, because schools were already obliged by law to provide information to parents, including access to records on their child possessed by the school, and the right to an independent educational evaluation of their child by an expert. The Court concluded that the burden of proof was properly placed on the parents.

The second example is a hard case. Prakken, Reed, and Walton (2006) presented a hard case of a Dutch Supreme Court trial about the labor dispute between the band Los Gatos and the Holland America cruise line. While the ship was waiting for repairs in harbor without passengers, when the manager ordered the band to perform for the crew, the band refused, and he fired them. In Dutch law, such an act of dismissal is valid only if there was a pressing ground for it, for example, if the employee persistently refused to obey reasonable orders. Los Gatos sued the Holland America line, arguing that this pressing ground did not apply in their case because the Holland America managers had refused to listen to their reason that they had refused to play. The issue was whether Los Gatos had to prove that they had a good reason to refuse to play, or whether Holland America had to prove that they did not have a good reason to refuse to play. The Court's decision was that Holland America had the burden of proof, because they had not given Los Gatos a chance to explain their reasons for not wanting to play.

Prakken constructed a formal system to show how shifts in a burden of proof occur in legal reasoning that pose problems that cannot be solved within nonmonotonic logics (Prakken, 2001c, p. 253). He argued that such problems are "irreducibly procedural" (p. 253) aspects of defeasible reasoning, illustrating this claim by an example (p. 259). A plaintiff justifies his claim that a contract exists by arguing that he made an offer and the defendant accepted it. The plaintiff supports this claim by bringing forward two witnesses who testify to his offer and defendant's acceptance. The defendant then rebuts his argument by offering evidence that the witnesses are unreliable. Which side has the burden of proof in such a case? As further moves are made in such a case, the burden of proof can shift back and forth in a trial. Generally, the side that makes a claim has the burden of proof, but in some cases, deciding which side the burden falls on may require a decision by a judge. This kind of situation is a problem for applying methods of argumentation and AI to legal dialogues. Some current research (Prakken et al., to appear, 2006) shows how higher-level dialogue systems called metadialogues can be constructed to manage disputes about burden of proof that arise in persuasion dialogues.

9.1. *Metadialogues*

Above we have identified types of dialogue that might be called ground-level dialogues (Krabbe, 2003, p. 83) as contrasted with a metadialogue, or dialogue about a ground-level dialogue. For example, there might be a dispute about the appropriateness of some move in a dialogue, requiring

a move to a metadiologue to resolve the procedural issue (Hamblin, 1970; Krabbe, 2003). To model this kind of shift, Wooldridge, McBurney, and Parsons (2005) constructed a first-order hierarchical metalanguage, such that no sentences from a higher level can be contained in the domain of a lower level. If the argumentation at a ground level becomes deadlocked by a dispute about which side should have the burden of proof, there is a need to shift to a higher level in order to rule on this issue. Krabbe (2003, p. 83) formulated the demarcation problem of deciding which critical moves belong to the ground level and which ones belong to the metadiologue level. A burden of proof impasse is such an example. Suppose one side says “You prove it!” and the other side replies “You disprove it”.⁹ Trying to resolve such a dispute within a dialogue, like a persuasion dialogue for example, might prove futile. The diagram in Figure 4.3 shows how such a problem requires a shift from the ground level to a metadiologue level. Krabbe (2003, p. 83) also stated two other central problems. The problem of infinite regress is that a discussion about ground-level rules may open up a discussion about rules governing the ground-level rules, which might lead to a discussion about the application of the second-level rules. The equity problem is that of resolving a metadiologue dispute while blocking unwarranted charges or procedural quarreling. In legal cases at trial, there is a third party (the judge) who has the responsibility of solving such problems.

10. Applying Dialogue Systems to Legal Argumentation

The dialogue systems and tools from multiagent computing outlined in this chapter are not meant as a method to replace deductive and inductive logic in the evaluation of legal argumentation, but as a supplementary method that can be used to evaluate how argumentation is used in a given case. For this purpose, the dialogue method is contextual. In any given case, an assumption needs to be made about the type of dialogue the participants are supposed to be engaged in. Evidence to support or refute such an assumption is to be found both in the actual text of discourse of a case and in the context of use, insofar as it is known. Any adequate analysis of appeal to witness testimony as a form of evidence needs to take account of the different contexts of dialogue this form of argumentation is used in. One is the kind of case where a police investigation is under way, and a witness states to the police that Peter shot George, to cite the example used in Chapter 1. Another is the kind of case in which a murder trial is under way. In this kind of case, the witness can be examined, and the trier can listen to the questions asked and the answers given. In law, this would be the typical kind of evidence introduced by witness examination in court. Another common

⁹ Many examples of this sort can be found in studies of the *argumentum ad ignorantiam* fallacy (Hamblin, 1970; Krabbe, 1992; Walton, 1996).

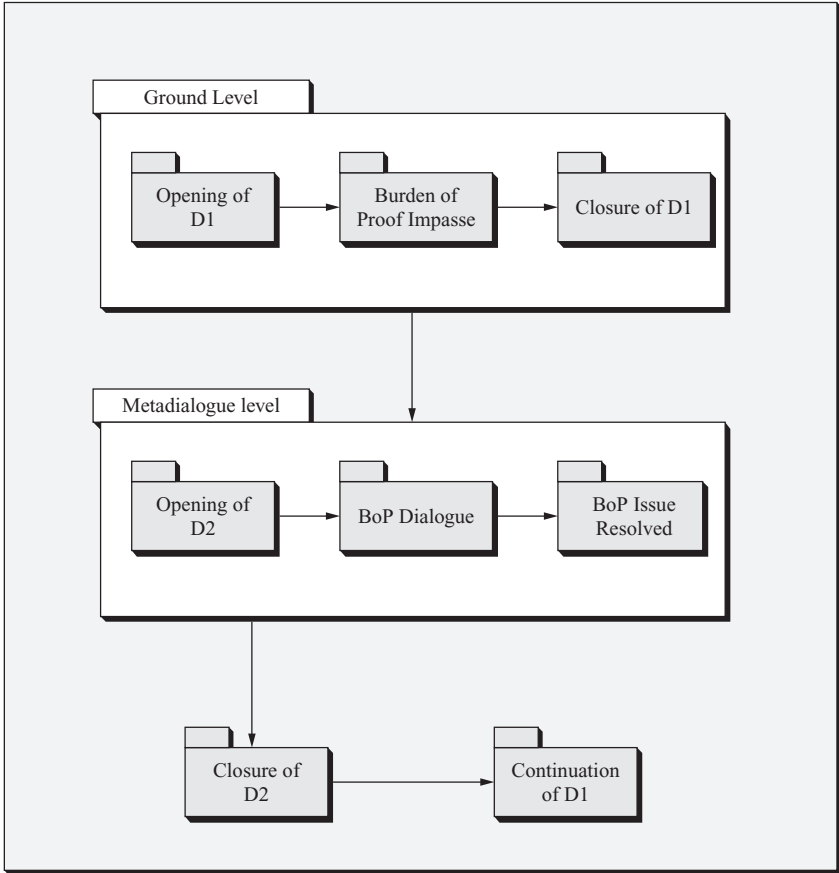


FIGURE 4.3. Shift from a ground-level dialogue to a metadialogue.

context would be the use of witness testimony by a historian. For example, a soldier who took part in a military campaign a thousand years ago may have recorded his view of events in a diary. Such a written account would be valuable historical evidence, especially if the soldier was an eyewitness of the actual events. In this kind of case, we only have the recorded testimony of the witness, and the witness is not available for live interactive questioning. This would be a typical case of witness testimony evidence used in history as an academic discipline. From a logical point of view, as being based on argumentation having the form of appeal to witness testimony, however, all three kinds of cases have the same general sequential structure. In all these cases, the activity of drawing conclusions from witness testimony can be seen as a form of rational argument resting on premises corresponding to the argumentation schemes cited in Chapter 1. But the context in each kind of case is different. Two appeals to testimony may have the same form of argument,

like those of argument 1 or argument 2 cited in Chapter 1. But it may well be that in different cases, the context of the investigation is different.

In cases of legal argumentation, it is frequently easy to determine the precise context of use of an argument, because of the structured nature of so much of the legal process. In a trial, or some particular stage of a trial, for example, it may be fairly clear in many instances whether an argument is relevant or not, because the purpose of the argumentation in that particular stage has been made clear in law. A judge can rule, on clear grounds, that an argument or question is relevant, or is not. In the end, however, all determinations of this kind are contextual, and so they typically have to be based on assumptions and estimates of various kinds. Let us cite a common kind of instance once again. Suppose a judge has to rule on whether an argument used at an early point in the argumentation stage of a trial is relevant; she may have to guess or estimate where the attorney's line of reasoning seems to be going, even though that has not been established yet. There should be some latitude given in such a case, and the ruling on relevance will be based on a conjecture, as indicated above. It is up to the judge to use her experience to make a contextual determination, based on her skill and experience in dealing with this kind of case. Despite all these contextual parameters, making rulings on relevance can be useful and necessary in guiding a fair trial toward its goal of resolving the initial conflict of opinions by testing out the strongest arguments on both sides.

Applying systems of dialogue to legal argumentation is a new field that has been little explored in the past. Many of the systems and applications are still at a beginning stage of development. The simplest systems of formal dialogue are made up of the following basic components – the participants, the moves (speech acts) of the participants, the sequences of moves, the commitment sets, the rules of a dialogue, and the goal of the dialogue. A good or correct argument (or other kind of move in argumentation) is one that keeps the dialogue moving along smoothly toward the realization of the collaborative. Some types of dialogue are more adversarial than others, but all have a collaborative element. Even the quarrel, the most adversarial type of dialogue, must have some collaborativeness in order to reach its goal of making up after bringing grievances to the surface and giving voice to them to a speech partner. In a productive quarrel both parties must at least take turns putting forward arguments and responding to the arguments put forward by the other side. Perhaps the most central problem is the formalization of the critical discussion as a type of dialogue representing the normative framework of the fair trial. As noted above, the critical discussion has not been formalized as a system of dialogue, and there are certain rules of it that would seem to be very difficult to formalize. However, the persuasion dialogue has been modeled in various formal systems (Walton and Krabbe, 1995). Since the critical discussion is a subtype of persuasion dialogue, it can be formalized to some extent. How to get a formal system

of persuasion dialogue that adequately represents the critical discussion for use in evaluating legal argumentation is therefore a central problem to be solved.

It has been shown that although the argumentation in a trial can be modeled as a type of persuasion dialogue, it is a special kind of persuasion dialogue with many special features. For one thing, there are all kinds of procedural rules applying to legal argumentation that themselves have legal status, like the rules of evidence. For another thing, these rules vary from place to place, and from court to court. For another thing, there are always more than two participants who take part in a trial. In addition to the attorneys representing the two sides, there is the trier of fact, a judge or jury, and there is the judge in his or her role as the referee or moderator who sees that the appropriate procedural rules are adhered to by both sides. There are also other parties, such as witnesses, who are important participants in a trial. Once the argumentation stage of the trial has been concluded, there is then a so-called deliberation stage in which the trier evaluates the argumentation, weighs up the evidence on both sides, and arrives at a decision on who won the case. All these features are quite different from the kind of persuasion dialogue that is involved in everyday conversational arguments, or in a philosophical discussion. In many ways legal argumentation, especially the kind used in trials, is much more structured and bound by specific procedural rules that have been codified outside the actual sequence of argumentation itself. Even so, modeling legal argumentation by formal systems of dialogue is useful, because it shows how important legal concepts such as relevance do have a logical basis. It may be that the best way to improve the quality of legal argumentation is to use formal systems of dialogue to give the logical core of legal argumentation some central normative structure.

Another central problem is how to model argumentation in the different kinds of dialogue in the different stages of trials. An especially interesting subject, in relation to recent concerns in the study of legal evidence, is how to model examination and cross-examination of scientific experts in court by an attorney. This type of dialogue exchange involves an interweaving of explanation and argumentation in information-seeking dialogue and persuasion dialogue, and also involves dialectical shifts of various kinds. The problem here is to understand how something that was scientific evidence as an argument in one context, becomes legal evidence in a different context, and then represents a different kind of evidence, judged by different standards.

Witness Examination as Peirastic Dialogue

Trial lawyers tend to see a trial from an adversarial viewpoint and tend to be highly skeptical of the notion that the examination of a witness in court could be seen as a species of information-seeking dialogue. But if you look at the trial from a wider viewpoint, say that of a judge, part of the purpose of it should be to bring the true facts of a case to light. This aim can best be achieved through the testing of the arguments of both sides in an adversarial clash, we hold. But it should not be a pure quarrel. The trier is more likely to get a better idea of what the truth of the matter really is through the information that witnesses can provide. On this basis of what the trial should really be about, it is argued that ideally, in a trial, witness examination should be assumed to have the function of bringing out information. But in practice, especially given the adversarial system of Anglo-American common law, the purpose that the examining counsel has is that of advocacy. In Chapter 5 it is argued that the best way to normatively model the argumentation in such a trial is as persuasion dialogue based on a special type of examination dialogue that is a species of information-seeking dialogue.

This chapter will show that it is a special kind of information-seeking dialogue that is involved in legal examination. Information-seeking dialogue seems to be very common and, on the surface, unproblematic. One party seeks some item of information, and the other party either supplies that information or does not. It may not even seem evident how information-seeking dialogue has argumentation contained in it. For the process, on the surface, only seems to involve a simple transfer of information. Computer models of information seeking often portray the process as the transfer of a statement from one database to another, as in the positivistic model outlined in this chapter. It is assumed that the questioner does not already have this statement in its database, and that the respondent does already have it in its database. But as shown in this chapter, any attempt to analyze what appear to be realistic cases of legal examination dialogues quickly reveals something going on other than this simple type of information transfer. For one thing,

the skilled examiner generally knows the answer before the witness gives it. For another thing, the examiner is an advocate, and her questioning will have a persuasive edge, or, some would say, a bias.

In examination dialogue, one party has the aim of getting information of some sort from the other party, but there is also an aim of testing out the other party. For example, in an examination in a school or university setting, the teacher asks the student questions and then uses the answers given to test the knowledge attained by the student. As in witness examination in a trial, the questioner (generally) already knows the answer. Even so, this type of dialogue can be classified as a species of information-seeking dialogue. But the aim of getting the information is to test the respondent, and the dialogue can sometimes have a critically probing edge to it. As shown in Chapter 2, the importance of this type of dialogue was known to the ancient philosophers. In the Platonic dialogues, Socrates tests out the knowledge of his interlocutors by a sequence of questioning and typically finds that they do not know as much as they thought. Socrates himself professes to be ignorant, but where he is knowledgeable is in the skill of dialectically examining those who profess to know by asking a probing series of questions.

1. Information-Seeking Dialogue

The most straightforward kind of case of information-seeking dialogue is represented by the following example, similar to the one in Walton (1998, p. 135).

The Passerby Case

A passerby approaches a professor near the entrance to the University of Winnipeg and asks her where Sparling Hall is. The professor replies, "It's in that gray building just over there" (she points) "around to the left."

In this case, the passerby asks for information on the assumption that the person he has selected may be in a position to know about the location of Sparling Hall. She looks like a person who is probably familiar with the area. If not, little is lost. The passerby can always ask someone else. Also, it is very little effort for the person selected to give the information if she knows it. The presumption is that she will be cooperative and helpful. This kind of case represents information-seeking dialogue at its simplest. One party is presumed to have certain information. She is presumed to be in a position to know about it. The other party has the aim of obtaining that information. The method of getting the information is to ask a question. The other party in the dialogue replies to the question by making assertions. Or if she does not know the answer, she will likely try to help by indicating to the questioner where he might go to seek out the requested information. The information in this case is the location of a hall on campus. The information is normally

contained in a proposition, such as “Sparling Hall is over there to the left”, which is true or false.

Even this simplest case, however, is potentially more dialectically complex than it might initially appear to be. The reason is that there could be elements of deliberation involved in it, depending on the precise wording of the question. If the questioner were to ask, “How do I get to Sparling Hall?” the question might not seem much different. It is still a request for directions to a specific place. But put in this way, the question asks how to get there. It asks, “What is the best route?” This is a different question. What is now presumed is that the questioner’s goal is to get there. This goal is different from the goal of finding out where it is. When the question is “How do I get there?” the type of dialogue involved is that of a deliberation. The problem is to get to a location, and the question is one of finding the best route – the best means to the end. This sort of dialogue about means and ends is one of deliberation. So even this simplest case contains a potential ambiguity. It is a case of information-seeking dialogue. But slightly modified, or interpreted in a slightly different way, which could be expressed in much the same or similar wording, it can be a case of deliberation dialogue.

1.1. Types of Information-Seeking Dialogue

Even this simplest case exhibits a feature that will be shown to be common to many cases of information-seeking dialogue. That feature is that the information is not just being collected at random. It is being collected for some purpose, often to solve a problem or to bring in premises needed for a persuasive argument. In the passerby case, the passerby really has the basic goal of wanting to get to Sparling Hall. That is implicit in her asking of the question. It is really an indirect question, like “Can you pass the salt?” This question appears to be a simple request for information, but it is really a request for action. In the passerby case, it is evident that the underlying aim of asking the question is for the questioner to solve her problem of how to get to Sparling Hall. Her goal is to get there, and this means that what she needs is to know the best route. The context of the question can thus be seen as involving an embedding of an information-seeking dialogue into a prior deliberation dialogue. Even this simple case then is comparable to questioning in legal examination dialogue, where the information seeking is embedded in an overarching persuasion dialogue within the adversarial legal system.

Other than this simplest kind of case, what other kinds of information-seeking dialogue are there? Another type recognized in Walton (1998, pp. 130–2) is that of the interview. But there are several well-known subtypes of interview, each of which has its own special characteristics. One is the employment interview. There have been many books and manuals on this type of dialogue, either giving advice to job candidates on how to perform well in the interview in order to get hired, or giving advice to the employer

on how to maximize the chances of getting the best applicant for a position. The manuals give advice on what questions to ask, how to ask them, in what order to ask them, what questions not to ask, how to answer questions, how to prepare answers for certain kinds of potentially tricky questions, and so forth. For example, Kaiser (1979, p. 49) advises the interviewer to focus on specific topics, such as the candidate's ambitions and adjustment within a group of colleagues. Kaiser (p. 49) also suggests asking tricky questions that test an applicant's honesty, such as, "Do you sometimes read the magazine *Economic Planning*?" (a magazine that doesn't exist). The employment interview seems to be a type of information-seeking dialogue, but it seems to be different from the more straightforward type of information-seeking dialogue represented by the passerby case. For one thing, the goals are different. In the passerby case, the goal of the passerby is to get some information he thinks the other party is in a position to know about. In the job interview kind of case, the goal of the questioner is presumably to find the best candidate for the job, while the goal of the interviewee is to give the best impression, in order to get the job. Perhaps the goals in the job interview are somewhat more complicated. But they certainly are different from those of the dialogue in the passerby case. In the job interview case, the goals are not the pure exchange of information from one party to the other, in the way indicated by the passerby case. There are ulterior motives, we might say, in the job interview type of dialogue.

Yet another type of information-seeking dialogue is represented by the media interview. Media interviews can be of different kinds, but the purpose is to record the respondent answering some questions or presenting some information, which can then be conveyed to an audience. One of the best known of these kinds of media interviews is the celebrity interview, in which the questioner probes into the personal life and character of the respondent so that the audience can find out more about a celebrity they are interested in. The Barbara Walters interview is a familiar phenomenon to television viewers, in which questions are used to reveal facts about the celebrity's personal life of an emotional nature, showing viewers what the celebrity's private life is like (often within limits set by the respondent). The goal of the celebrity interview is to get a certain type of information about the respondent as a person that will interest a mass audience.

Another type of information-seeking dialogue is represented by the kind of case in which a researcher searches through a database in order to find some specific kind of information that she thinks can be found in that database. Many kinds of academic research involve, at least at some stage of the process of the research, this kind of information-seeking dialogue. Typically how the process goes is that the person will put in some key words indicating the topic of the information she seeks. The computer software will then present a list of titles of books and articles, or other relevant items of information, on the screen. The person will then choose certain items

by pressing a key, or otherwise indicating an item, and the system will then present more information on that item. An abstract of an article may be shown, for example, and the data base user will be shown the bibliographical information needed in order to get the article.

It may seem odd at first to think of searching through a database as a 'dialogue', because one participant in the process is a software system and not a human being. Nevertheless, in this sense of the term 'dialogue', it is not necessary for a participant to be a human being. One participant, or even both participants, could be machines, or software question-answering systems. The main thing is that one party is asking questions or making queries (for example, by putting in key words), and the other party is attempting to supply information in response to these queries. The case of an individual searching an automated database fits the requirements for this type of dialogue. The questioner has some aim in mind, such as writing an essay assignment, which could take the form of a persuasion dialogue. But then it is useful for a prior information-seeking dialogue to be embedded in this larger dialogue, in order to find the facts that will be useful in the arguments put forward in the essay project. The later need to engage in this persuasion dialogue is what sets the problem posed by the need for information. Thus the information dialogue goes through several stages. First, there is the need for information that makes the information seeking useful. This is the problem-setting stage, comparable to the confrontation stage of the critical discussion type of dialogue. Then there is an opening stage in which the questioner undertakes the project of trying to collect the required information. Then there is an argumentation stage in which the information seeker uses some notion of what is relevant to solving the initial problem to cast around, often by trial and error, to look for helpful information. Finally, there is the closing stage of the information-seeking dialogue, where enough information has been collected, and then the main task can be launched, using this information as a knowledge base.

In this section, three familiar and different types of information-seeking dialogue have been recognized – the employment interview, the celebrity interview, and the question–reply dialogue in searching through a database. The goals and methods of each are distinctly different, but they are all special types of information-seeking dialogue, meaning that the basic goal is for one party to get some kind of information that she thinks the other party possesses. But in each of the three types of dialogue, a different kind of information is sought. In the employment interview, information about the respondent's character and personal qualities are sought, just as in the celebrity interview. For example, the interviewer definitely wants to find out if the respondent might be dishonest, or might be antisocial or difficult to get along with, or might be a thief. These are all matters of character. In this respect, the employment interview is similar to the celebrity interview. Or, at any rate, there is overlap in the goals of the two types of dialogue.

But there are also differences. In the employment interview, an important part of what is sought is information about the competence and training of the respondent to perform a job. In other words, part of what the questioner is trying to do is to find out the level of skills and knowledge of the respondent. So there is a testing involved, we might say, as well as a probing into the respondent's character. In short, while the employment interview and the celebrity interview have much in common, both being species of information-seeking dialogue, they also represent distinct subspecies each of which has its own special characteristics.

Finally, it needs to be mentioned that there is another special type of interview dialogue, called the interrogation. An example would be the interrogation of a witness by the police. Many manuals have been written on how an interrogation should best be conducted by a questioner, in order to extract the desired information from a respondent. It should be noted that the interrogation is not a normal type of information-seeking dialogue in which there is free flow of information. It is typically a coercive form of interview in which the respondent may be put under considerable pressure by the interrogators. For example, the police may put all kinds of pressure on a respondent to confess to a crime, while the respondent may be an unwilling participant in the process who may be trying to conceal information rather than passing it on to the questioners. Clearly the interrogation is a very special subtype of information-seeking dialogue that is markedly different from the typical kind of information-seeking dialogue in many important respects. It is studied in Section 9 of this chapter.

The simplest type of information-seeking dialogue is represented by the passerby case. There are no special features of the dialogue in this kind of case. It is just a straightforward request for some sort of factual information. The interview, however, is a more elaborate format, usually staged at a particular time and place. Both parties have well-defined roles. The interviewer will usually prepare the sequence of questions in advance, or at least have some strategy of asking a sequence of questions in a particular order. The interviewee will realize that he is "going on record" as making assertions he can be held to, when he offers an answer. But there are many different kinds of interviews. Two recognized above are the job interview and the celebrity interview. Each has its own special purpose and format. But what is basic to the dialogue as a whole is the goal of obtaining some desired kind of information.

The case of searching through a database is also a special subtype in its own right. The reason information is being collected in this kind of case evidently relates to its potential for use in some kind of larger project – for example, in academic research, or to prepare a report on some subject of interest. Once again, the immediate goal is to collect information, but the longer-term rationale is to use this information for some special purpose, which may vary from case to case. Generally, though, the purpose would

be to use the information as evidence in some kind of inquiry, discussion, or deliberation on what to do. Thus the collection of information would serve some further purpose of providing evidence that would be used in some secondary kind of dialogue following upon the information-seeking dialogue.

2. What is Information?

In Western culture we have tended to have a positivistic notion of information that can be described as follows. The term ‘information’ is taken to refer to objective data that exist independent of any human mind. Information, according to this meaning, is what is contained in a proposition that reports the ‘real world’ or the ‘facts’ of a case. If what the proposition asserts corresponds to the ‘facts’, then it is true, meaning that it represents genuine information. If it does not correspond to the ‘facts’, then what it asserts is not genuine or real information.

2.1. *The Positivistic View*

The foregoing account of what information is could be described as positivistic, referring to the philosophy of logical positivism, which saw the meaning of a proposition in its empirical content, or what it reports as factual. The positivistic account of information applies very well to some cases. For example, suppose you ask me the question, “What color is Bob’s sweater?” and I reply “Blue.” We say that my answer presents information to you. If Bob’s sweater is really blue, then what I said to you represents genuine information. If Bob’s sweater is really red, then what I said to you is not genuine information. The information is what corresponds to the real facts of the case. In what may be called the positivistic view, all cases of seeking or finding information are, or should be, basically the same as the Bob’s sweater case. As Jack Webb used to say on *Dragnet*, “It’s just the facts, ma’am – that’s all we want.” According to the positivistic view, the so-called facts exist objectively, and they collectively represent the information.

The positivistic view fits philosophically quite well with the inquisitorial model of the trial, predominant in continental Europe, and in much of Asia, Africa, and Latin America (Strier, 1996, p. 142). In this model, the role of the trier is to collect the facts and then use this information to arrive at a decision. The continental system of law is much less adversarial, and the information-seeking function of the trial is much more highly emphasized. Much more of the questioning of witnesses is done by the judge, who is supposed to be impartial, rather than by the opposing counsels. In the continental system, the presiding judge calls witnesses and questions them in an informal manner (Van Kessel, 1992, p. 16). There are few objections by counsel, and there is opportunity for the witnesses to offer explanations and lengthy narratives. There is no formal division into direct examination and cross examination

of a witness. There are not so many technical rules governing the examination procedure as in the Anglo-American system (Van Kessel, 1992, p. 16). The term ‘inquisitorial’ has negative connotations because it is associated with the Inquisition, a historical phenomenon that, as is well known, is not associated with the aims of justice or finding the truth of a matter. Perhaps this model might be called the interrogation model, because the witnesses are interviewed or interrogated by the judge, and then the judge decides the outcome based on the information received and the rules of law. In any event, both models represent ways of collecting information by questioning, but they do it in different ways.

In the positivistic view, the collection of information appears to be simple. The so-called facts are known by a witness or informant, who could be Nature in the case of a scientific investigation. The task is merely to ask a question such that the answer contains the fact that is sought. This model of fact-finding seems so simple that information seeking seems almost trivial as a form of dialogue in which information can be defined objectively. This positivistic quest to define information as an objective entity that can be measured quantitatively is most dramatically expressed in the mathematical theory of Shannon and Weaver (1972). According to this theory, information is measured by the objective probability of the occurrence of an event. Events that are less likely to occur are said to contain more information than events that are more likely to occur. Adams (1995, p. 377) gives the following example: “to discover that the toss of a fair coin came up heads contains more information than to discover this about the toss of a coin biased (.8) toward heads.” The perceived advantage of this definition is that it makes information an objective quantity that can be measured exactly by the probability calculus. This way of defining information introduces an element of precision that makes information seem to be both objective and quantitative in nature.

In this sense defined by Shannon and Weaver’s theory, information is independent of human perception and interpretation. It can be measured quantitatively as bits being transferred over a wire from one terminal to another. Information is identified with how many possibilities are eliminated in a given case (Adams, 1995, p. 377). Shannon and Weaver (1972) utilized one convenient way of measuring information in this sense by calculating how many bits (binary digits) are needed to represent binary decisions in the reduction of possibilities in an electronic environment. By this objective definition, information quantity is measured in relation to reduction of uncertainty. The more uncertainty is reduced in a given case, the more information is judged to have come into that case. According to Hauser (1996, p. 8), “the goal of the Shannon–Weaver approach is to determine whether the type of response selected by the receiver appears to be causally related to the type of signal selected by the sender.” This appearance of causal relatedness is measured in a given case by the formula given by Shannon

and Weaver to measure the reduction of uncertainty. The formula is based on calculation of probabilities that measures, within a field of events, whether the probability of each event goes up or down. Hauser (1996, p. 8) presents the following example to illustrate how the equation works. As two boxers prepare for the big fight, each gets some information about the capabilities of the other. First they study each other's boxing records and previous fights. Then when they enter the ring, each boxer eyes the other and makes some useful observations. During the first round, each boxer sees what the other is doing. So at each step of the sequence, as each bit of information comes in, there is a reduction in uncertainty.

How could this sort of definition of information be adapted to the needs of the present inquiry? The problem is whether in this context, although the idea of reduction of uncertainty is a good indicator of incoming information, reduction of uncertainty can be measured by reduction or increase of probability values in a series of events. Information needs to be seen as more than just probability values in a field of events, or binary digits transmitted from one point to another over a wire.

2.2. *A Multiagent View*

Information needs to be seen as transmitted in a goal-directed conversation between two participants. Information is what an agent needs as a set of accurate representations of a real situation that is relevant to the agent's carrying out some goal or taking action to solve some problem. The boxer, in the example, needs some accurate representations of his opponent's boxing capabilities that are relevant to the actions he needs to take in order to win the fight.

What qualifies as information in a case depends not just on the probabilities of the events in the case. It depends crucially on what is relevant or needed to solve a problem. You have to look not only at the events themselves, but also at what role these perceived events play in a dialogue between two parties. One party has the role of questioner, or information-seeker, and the other has the role of respondent, or information-giver. The interface between the two is a collaborative dialogue that has a certain structure and has conversational postulates or rules that determine appropriate questions and replies during the various stages of the conversation. By these lights, information has a communicative component. Even so, the core of information does have a factual component, assuming that information is mainly, or perhaps even exclusively, made up of propositions that are supposed to be true.

More and more information seeking is being automated using multiagent systems on the Internet. A recent development in AI is the use of formal dialogue methods derived from argumentation theory to structure such information-seeking dialogues. A system developed by Doutre, McBurney,

Wooldridge, and Barden (2005) classifies these agent interactions as information-seeking dialogues. Doutré et al. (2005, p. 4) presented the following motivating example of their information-seeking dialogue system. Robert is a British businessman who has fallen ill during a meeting in Brussels. It is suspected that he has had a heart attack, and the hospital staff wants to prescribe a drug, but the choice of treatment may depend on Robert's prior medical condition. The hospital's agent has the goal of finding this information from an agent representing Robert's London doctor.

Agent of Robert's London doctor: Yes, I agree to dialogue with you

Brussels agent: I request Robert's health record.

London agent: I can provide you with nonsensitive information (Robert's history of diabetes) but, because Robert has only given his British doctor limited consent to pass on his personal information, I cannot provide you with sensitive information (Robert's psychiatric history).

Brussels agent: The missing information could possibly include information that could affect the treatment of Robert's heart failure. I request the sensitive information. Robert's life may be at stake!

London agent: I cannot divulge the sensitive information, because British law prohibits passing on information without the consent of the provider of the information.

Brussels agent: EC law takes precedence over British law when it would be in the interests of the owner to divulge the information. You should allow me to access the sensitive information.

London agent: Only Robert could decide what would be in his interests.

Brussels agent: Robert's doctor owes a duty of care to Robert and, should he die, the doctor might be sued by his family, or the Brussels hospital, or both.

London agent: I yield to this argument. You can access the sensitive information. I will provide it to you.

Brussels agent: Thank you.

In the formal system representing this kind of dialogue, an argument must be provided by an agent who seeks permission to get access to some information desired. There are two participants. The agent requesting the information is called Client. The agent that controls access to the information is called Server. The Client's goal is to get the information it needs, using persuasion if necessary. The Server's goal is to provide the information, subject to laws and to the level of access of the Client.

Doutré et al. (2005, p. 4) set out eight speech acts that represent the minimum locutions needed for a dialogue between Client and Server. They

describe these speech acts formally with the use of constants and variables, but below, a simplified account of them is presented, giving an idea of the function of each locution.

OpenDialogue(x,y) Participant x indicates to participant y that it wants to enter into a dialogue with y .

Ask(x,y,i) Client x asks Server y to provide it with some information i .

Tell(x,y,i) Server x tells Client y that it can provide y with information i .

DontTell(x,y,i) Server x indicates to Client y that it cannot provide y with information i .

Provide($x,y,<\text{content } i>$) Server x provides Client y with the actual content of information i .

Argue($\text{perm}(y,i),\text{mode},A$) A participant gives an argument A about the permission that a participant y has to access information i : this permission may be true, false, or to be added. This is indicated by mode, which has the value

YES, if A indicates that participant y has permission to access i .

NO, if A indicates that participant y does not have permission to access i .

ADD(x), if A indicates that Server x should add to its permission base that participant y has permission to access i .

Accept($x,A,\text{perm}(y,i)$) Server x says that it believes that argument A referring to permission $\text{perm}(y,i)$ is acceptable.

EndDialogue(x,y) Participant x indicates to participant y that it wants to leave the dialogue.

We can see from this example and list of locutions how the formal information-seeking dialogue is structured just in the way we modeled such dialogue systems in Chapter 4. There are two participants. Each participant has a goal. The dialogue as a whole has a goal. The dialogue goes from an opening stage to a closing stage, and in the middle, there is an argumentation stage in which different moves are made by each participant. They take turns, and each move fits the format of a locution (speech act) that has been clearly defined. All the features described in Chapter 4 are required.

The formal information-seeking dialogue described above is just one of many kinds of systems of information-seeking dialogue that could be built and applied in multiagent computing. What is especially interesting about this particular dialogue, for our purposes, in addition to its being an example of how information-seeking dialogue is formalized in AI, is the feature of having a speech act for presenting an argument, in addition to the basic speech acts for asking for providing information, *ask* and *tell*. We could have an even simpler system that only had speech acts such as *ask*, *tell*, and *don't tell*. But as the example indicates, there is a need in this particular

application to have a system in which arguments concerning permission to get information can be put forward by one party and responded to by the other. Thus we see that, to be useful, the system must have more than just the positivistic function of passing propositions back and forth between the two agents. It must also have speech acts that allow the two agents to engage in arguments with each other about the providing of information.

2.3. Usefulness and Reliability of Information

Something about the nature and importance of information-seeking communications in everyday life can be revealed by a familiar example. Most of us have had the experience of trying to shop for a new computer, going to the store, and being blitzed by the salesman with information we do not really understand. He tells us lots of facts about gigabytes, RAM, parallel ports, and so forth, and we despair of ever being in a position to find out what to buy. Some very good advice can be given to anyone in this situation by warning him or her not to become confused by all the technical information, and instead to turn the situation around. Tell the salesman, "This is what I need to use the computer for. Now tell me what equipment I should buy to do that job." The problem we all face in this familiar kind of situation is one of getting information. But we do not want just any information. Often, we seem to get too much of it. What we need is useful information: information that not only is true, but also is comprehensible, and is the right sort of information to do some job. In the theory of information-seeking dialogue advanced in the subsequent chapters of this book, what is judged to be important is not just getting any information, but getting useful information that is needed for some purpose.

Of course, another aspect of this is that we do want information that is true. When confronted by a salesman, that is another aspect of the matter. We may not, with good reason, entirely trust the salesman always to tell the truth, because he has an interest at stake that gives him a motive for bending the truth, or emphasizing some information over other information, when dealing with a customer. So we want not only useful information, but also information that is reliable, or that is likely to be true. What is important is that we need to be able to critically evaluate the salesman's argumentation by asking questions that probe into it and test it out. This testing function will turn out to be vitally important. It is important precisely because of the need in information-seeking communications to get reliable information of a kind that the information-seeker has some reason to think to be true.

Presumably, for most purposes, information represents some propositions – that is, some assertions made in declarative utterances. These assertions are put forward in answer to a question. And the propositions contained in the assertions are true. If the content of information is a set of true propositions, then information is objective, or has an objective component. But what is a 'true' proposition? According to the correspondence theory,

it is a proposition that 'corresponds' to the 'facts' of a real situation. Even apart from the difficulty of defining this relation of correspondence, this definition is too narrow. For two participants can be engaged in information-seeking dialogue even if the propositions asserted by the one side turn out to be false. So there must be some weaker requirement, other than the proposition in question being true. This weaker requirement can perhaps be expressed as follows: information is a set of propositions given by the hearer to the speaker who requested them, for which the hearer presumes that the speaker thinks that these propositions are true. That is, the hearer wants true propositions. That is what he is trying to get. But he is not sure that the propositions asserted by the other party are true. Even so, he asks the other party for the information in the hope that the propositions he gets do represent the truth of the matter in question. He is engaging in the dialogue on the assumption that the other party does know the truth of the matter and will pass it on.

On the other hand, the questioner may ask for information even though he thinks there is a relatively good chance that the respondent will lie, will conceal the truth, or may be mistaken. And we would still rightly call the conversation a case of information-seeking dialogue. We often tentatively accept a proposition as representing information even though we are not sure that it is true, or even if there is not a high probability that it is true. Indeed, in many cases, we could not even realistically calculate the objective probability that the proposition is true or false.

3. Information Seeking in a Trial

The positivistic view of information serves well in the kind of case, such as the Bob's sweater case, where the report and verifying or falsifying the report are simple and straightforward, and there are no doubts or reservations to be considered. And it works well also in cases where uncertainty can be quantified objectively by the numerical measures of the probability calculus. But it works less well in the many real kinds of cases encountered in daily thinking and acting where verification or falsification is more problematic. Let us take the case of a murder trial where the witness claims to have seen the defendant kill the victim, but the killing took place on a very dark night in the woods, and there were trees between the location of the witness and that of the killing. The problem is that the witness was in a position to know something about the killing, but can we really believe his story that it was the defendant? This kind of case presents a typical legal problem of examining a witness. The examiner, and as well the cross-examiner, when it is his turn in the trial, has to ask the witness the right questions, to determine what the witness really saw and heard on the night of the killing. The problem is that since it was such a dark night, it is problematic whether the witness could have really seen anything at all. Or if he did see something, the examiner

must try to get down to the basics by getting the witness to describe his actual sensations without imposing dubious interpretations on it, such as describing it as a ‘murder’. The examiner also has to perform a critical probing and testing function. For example, if what the witness says appears to be inconsistent, or to clash with the known facts of the case, the plausibility of his account needs to be questioned. What will happen generally in a case such as this is that the witness will present a story in the form of an anchored narrative that describes what the situation allegedly was as he saw it. The examiner must not only extract the story, but also probe into it critically and test out the weaker details. How does examination of witness testimony in a court resemble other kinds of information-seeking dialogue we might be familiar with?

One common type of information-seeking dialogue is the interview. Interviews can be of various kinds. There can be job interviews, for example. And we are all familiar with media interviews of various kinds – for example, the Barbara Walters type of interview of a celebrity on TV. In criminal investigations, witnesses are interviewed, and suspects are also interviewed. But examining a witness in a trial is different from this kind of interview. It is much less of a friendly, casual conversation, and much more focused on evidence of a kind that can be proved and that relates to the issue at trial. Another common type of information-seeking dialogue is called the interrogation. It is even more tightly controlled and coercive than the examination of a witness in a trial. In an interrogation, the respondent must be very careful not to make damaging admissions that may later be used against him, for example in court. In some interrogations, deceptive tactics may be used, and threats may be made. In extreme cases, physical force, or even torture, may be used. In witness testimony in Continental law, the judge simply asks the witness a series of questions and then uses the answers as evidence to arrive at a decision. This process, sometimes called ‘inquisitorial’, does sound, at least to its critics, as though it might be similar to interrogation.¹ Anglo-American law, in contrast, is based on an adversarial model in which the court hears both the questions addressed to the witness and the answers he gives. The trier hears both sides of the dialogue and arrives at a decision based on an assessment of the dialogue as a whole. Here it is not a case of information simply being extracted, as in an interrogation. There is a sophisticated kind of argumentation in which the answers of the witness are being tested against the facts of the case and against other evidence, even his own previous testimony.

3.1. *Redefining Information*

Now the philosophical question needs to be asked: how should the concept of information be defined in this kind of case? Try to apply the positivistic

¹ Damaska (1997).

view once again. The information is what describes the facts. But the problem is that we do not really know what the facts are. We know some of them, from the evidence collected from the scene of the killing, and so forth. But we do not know who killed the victim, or the details of what transpired beforehand and led up to the killing. All we have is the account of one witness, and, under the circumstances, this account appears to be somewhat open to doubt. So it does not do us much good to say, "Well, either the account given by the witness corresponds to the real facts of the case or it doesn't. If it does, it is genuine information. Otherwise it is not genuine information." This positivistic view does not take us far enough to be of much use in this kind of case. It is also misleading, because it suggests that the witness is a repository of a set of facts, and all the examiner needs to do in questioning the witness is to ask each question so that it corresponds to one of these facts. But this account is highly misleading, because it suggests that closed (choice) questions are all that are needed. Each choice question elicits a specific fact, according to the positivistic theory, and then once all the facts have been collected, the purpose of the dialogue is fulfilled. The positivistic view makes information-seeking dialogue look as though it should be an interrogation. The respondent has a set of bits of information or 'atomic facts'. All the questioner has to do is to pump these bits of information out of the respondent, one fact at a time, using an atomistic sequence of closed questions. This account overlooks many shadings and subtle considerations of the kind that have been shown to be vital in the theory of anchored narratives. There is the importance of open questions in getting a coherent narrative. There is the importance of the ordering of the so-called facts of the narrative into a plausible story. Then there is the importance of the filling in of the gaps in the story – the missing premises and conclusions in the sequence of reasoning. All these subtleties of information seeking are required as parts of the basis on which the plausible stories that are the basis of the information can be elicited and evaluated.

What really needs to be done is to extract the account from the witness, by a combination of asking search (open) questions and asking the right choice (closed) questions, where the whole sequence of questions is asked in the right order. The first stage of the process is the getting of a story in which the relevant facts are connected. And then once the story has been extracted, we need to test out its plausibility. Once the story is produced through a dialogue with the witness, plausible reasoning must be used to test out and critically probe the weak points in it. The right critical questions need to be asked, including ones that test the credibility of the witness. After this process has been gone through, a final evaluation of the plausibility of the story can produce the right sort of evidence needed for the task.

The concept of information needs to be redefined or rethought, as applied to these techniques of getting useful information as evidence in a trial. Information is no longer just what corresponds to the so-called

facts. Information needs to be extracted from the anchored narrative of the witness by testing out that narrative in an examination dialogue. What the real information is we may not be entirely sure of. We may have one story from one witness and a conflicting story from another witness. We have to decide which account is the more plausible and then fit that bit of evidence into the larger body of evidence in the case. This view of information is plausibilistic and skeptical. It says that even though we are not certain about the true facts of the case, we can judge what is more probable or less probable. What we get is a story or connected account, and if that story fits with what other witnesses say, and fits in with the other evidence in the case, such as forensic evidence, it can be a plausible account. If it is highly plausible, and it is the most plausible account we have, then we can say that to our best knowledge, this account represents the information about what really happened in the case. But since the acceptability of the account is based on plausible reasoning, it is never absolutely certain, beyond all possibility of doubt.

To see how witness testimony as a form of argumentation is a type of information-seeking dialogue, it is necessary to redefine the notion of information. In the older positivistic view, a proposition reports genuine information if and only if that proposition corresponds to the 'real facts' of a case. That is fine, as far as it goes. The problem is that it just does not go far enough to deal usefully with the typical kinds of problematic cases encountered in everyday situations, and particularly in legal trials. According to the new definition, whether something extracted from a witness is genuine information depends on what is taken to be a plausible account of the real facts of a case. This definition of information has a skeptical tone. It postulates that even though we may not be in a position to know what reality is like in an absolute way, or know about factual things with absolute certainty, we can know what happened on a basis of probability, or what is more accurately called plausibility. According to this view of information, plausibility can be good enough for many evidential purposes, even though it is not perfect evidence.

Information can still be defined as reduction of uncertainty. But the process of elimination is not one that can be measured in relation to the greater or lesser probability of an event. It is reduction of uncertainty in the sense of inference to the best account of an event by filling in and assessing the account of the event. A plausible account reduces the lack of information by answering questions about why and how something factual occurred. Doubts and uncertainty are reduced. But of course, with plausible reasoning, the doubts are never entirely removed, and questions remain. Trying to quantify all the relevant aspects of the story using the objective measurements of the probability calculus only takes us so far. Testimony given by a witness, once tested by being examined critically in a trial, may provide a good enough basis for drawing plausible conclusions. Thus uncertainty

is reduced, and the dialogue provides information. The outcome is that evidence is furnished to the trier.

4. Examination Dialogue

Another type of dialogue that appears to be of the information-seeking type is that of an educational exchange between a teacher and a student. The problem here is that there are many philosophical views of education. Some would say that education should not be regarded as a mere passing on of information from the teacher to the student. Some would say, for example, that education should involve the learning of critical thinking skills. Others would say that in true education, the student already possesses the knowledge, and the teacher's job is just to make the student more aware of that knowledge by bringing it to the surface through challenging the student to question his uncritical, dogmatic beliefs. In other words, it is possible to have different philosophies of education. Even so, it would seem that however you view teaching and learning, the passing of information from the teacher to the student should surely be one part of it, perhaps an important part. So even though pedagogical dialogue may not be a subspecies of information-seeking dialogue, the two types of dialogue do appear to be closely related.

But now we come to one part of educational dialogue that does seem to be a special subtype of information-seeking dialogue, and that is examination dialogue. In this type of dialogue, the teacher asks questions to the student in order to test the student's knowledge of the subject of instruction. The student is supposed to give an answer, based on what he learned in the course of instruction. And then the teacher must evaluate the answer, to judge how well it shows the student has learned or grasped the knowledge that was taught in the course. This kind of dialogue is called 'testing'. The teacher sets a test, and the student shows by his performance on the test how well he has mastered the subject. Another word for it is 'examination'. The student is examined, we say, in order to determine his level of attainment of knowledge in a field or subject being taught. An examination can be written or oral, but it is always conducted by asking questions that the examinee is supposed to answer. The questions are supposed to probe into and test out the student's mastery of the subject.

Examination dialogue is a peculiar and somewhat complex form of information-seeking dialogue, because the teacher already has the information. Normally in information-seeking dialogue, the questioner lacks the information, and her goal is to obtain this information from the respondent. But in the case of examination dialogue, the questioner is the one who has the information. The respondent may have it or may not. And the object of the exercise is to determine whether the respondent also has the information or not, or to what extent he has it. Thus if examination dialogue is

a species of information-seeking dialogue, it is a very special sort, in which the passing along of the information is reversed. It is the questioner who has the information. And she then wants to see if the respondent also has it.

One way to describe examination dialogue is to say that the questioner seeks information on whether the answerer has the information. Put this way, the flow of information is normalized. The questioner is seeking information. But she is seeking information about the information possessed by the other party. On this view, examination dialogue seeks information about information. It seeks information about whether another party has that information. So it is not just seeking the information. The questioner already has the information. Instead, she seeks information on whether the other party also possesses that information or not. If this description of examination dialogue makes sense, it can correctly be described as a subtype of information-seeking dialogue, even if it is a very distinctive subtype with its own special characteristics.

4.1. Examination in Ancient Dialectic

Argumentation theory has concentrated on the critical discussion type of dialogue as central, and postulating examination as a type of dialogue may seem unfamiliar. But there is a historical precedent. As noted in Chapter 1, Section 7, examination was identified by the ancient Greek philosophers as a type of argument used in a discussion. In *On Sophistical Refutations* (165a40–165b12), Aristotle wrote that there are four kinds of arguments used in discussions – didactic arguments, dialectical arguments, examination arguments, and contentious arguments. Didactic arguments are those used in teaching. They might also be called pedagogical arguments, to use a term that does not have some of the same moralistic connotations that the term ‘didactic’ has. Dialectical arguments are those which, “starting from generally accepted opinions (*endoxa*), reason to establish a contradiction” (165b4–5). Dialectical argument may be described as arguing both sides of a case on the basis of current views (Evans, 1977, p. 2). Aristotle described dialectic (*Topics* 101a34) as a process of criticism based on the ability to raise searching difficulties on both sides of a subject. Presumably, Socrates’ performances in the Platonic dialogues would be the most outstanding examples of dialectical arguments. Examination arguments (*peirastikoi logoi*) are “based on opinions held by the answerer and necessarily known to one who claims knowledge of the subject involved.” Peirastic or examination arguments are “fitted to test someone’s alleged knowledge and are based on the views held by the respondent” (Nuchelmans, 1993, p. 37). Contentious arguments (*eristikoi*) are “those which reason or seem to reason from opinions which appear to be, but are not really, generally accepted” (165b8–10). This fourfold classification by Aristotle is extremely interesting, because it represents the first systematic attempt to classify the different uses of arguments in different frameworks of dialogue.

But is the classification fourfold or threefold? Hamblin (1970) took dialectical and examination arguments as being the same class. He sees Aristotle's classification, in other words, as threefold. But he points to ambiguities suggesting that Aristotle may not have been altogether consistent in sticking to his classification system. Hamblin (1970, p. 59), citing the passage in *Topics* 159a25, wrote that "the contrast between the three kinds of argument – didactic, dialectical or examination, and contentious – is clearly drawn." In this passage, Aristotle mentions examination arguments and contrasts them with contentious arguments, but it is less clear that he is attempting to make a distinction between dialectical and examination arguments. Starting with the passage quoted by Hamblin, Aristotle began a longer discussion of the role of *endoxa* in dialectical argumentation. Perhaps because Aristotle did not clearly rule out that he is referring to examination arguments in this longer discussion, Hamblin may take him to be talking partly about examination arguments, or even to be taking the two kinds of arguments to be one and the same. At any rate, there is some controversy about whether dialectical and examination arguments are the same, or whether they represent two distinct categories of argument. Guthrie (1981, p. 155) also saw peirastic as being part of dialectic, or tied in with it, but appeared to see it as somewhat distinct as well.

It is not evident that Aristotle saw examination as a type of dialogue in the modern way in which distinctions are drawn between types of dialogue in the new dialectic. Nevertheless, he did identify examination as a particular type of argument, and he contrasted examination arguments with other kinds of arguments, such as dialectical arguments. This fact in itself is highly significant for the new dialectic. What is also highly significant is that Aristotle raised questions about the relationship between examination argument and dialectical argument.

4.2. *Examination Dialogue in Artificial Intelligence*

Dunne, Doutre, and Bench-Capon (2005) have constructed a formal model of examination dialogue in which one party, called the questioner, elicits statements from another party, called the responder. The questioner has the aim of discovering the responder's position on some topic being discussed. The questioner may do this either to gain insight into the responder's understanding of the topic, or to expose an inconsistency in the respondent's position. According to their classification, examination dialogue is nested within the information-seeking type of dialogue, and it is also seen, in some cases, as a prelude to persuasion dialogue (p. 1560). They use the value-based argument framework of Bench-Capon (2003) as their formal system in which examination dialogue is defined. Here we will not go into their formal system in detail, but merely indicate that it conforms in the general outline of the way it is built to the types of dialogue structures defined in Chapter 4. Examination dialogue is seen as defined as a sequence of moves

or speech acts. One move is obviously the asking of a question. The questioner can also ask the responder his view on a particular proposition, and the responder can either accept or deny this proposition, or alternatively may refuse to say anything about it. In this way, the questioner can collect information about the responder's commitment or lack of commitment to a given set of propositions. One of the questioner's moves is to identify an inconsistency found in the responder's previous commitments, and she can then challenge the responder to resolve his commitments. In this way, their formal system of examination dialogue models one important feature of the kind of examination dialogue found in a trial. A formal problem they pose is that, in real debates, or in cross-examinations of the kind conducted in trials, such inconsistencies can be quite subtle, and it may take many moves for the questioner to elicit the contradiction and to build it in into an attack on the opponent's argumentation.

An analysis of the structure of examination dialogue was presented in Walton (2006b), and this type of dialogue was shown to be most prominent in law and in both legal and nonlegal arguments based on expert opinion. It was also shown to be central to dialogue systems for questioning and answering in expert systems in AI. The examples studied included exegetical analyses and criticisms of religious and philosophical texts as well as legal examinations and cross-examinations conducted in a trial setting. It was concluded that examination dialogue has two basic levels and that the argumentation in this type of dialogue needs to be analyzed in light of a dialectical shift from one level to the other. At the first level, one needs merely to get an account or exegetical reconstruction of what the expert is claiming or arguing. Such an exegetical reconstruction must be fair and accurate, based on the reproducible textual evidence of the expert's discourse. Part of the purpose of this level is clarification, but it should not be seen as a vehicle for opening up the argument to criticism. The second level, however, is argumentative. At this level, the analyst plays the role of critic who probes into the weak points of the expert's view or argument, expressing critical questions that show up its weaknesses and gaps. It is the joining together of these two levels that represents the structure of examination and defines it as a type of dialogue. The Greek philosophers made a distinction between two types of examination that bring out this distinction very well.

5. Peirastic and Exetastic Dialogue

Guthrie (1981, p. 155) complicated Aristotle's fourfold classification by distinguishing between peirastic argument and another closely related type of argument he called 'exetastic'. According to Guthrie's account, 'peirastic' means 'testing or probing', and 'exetastic' means 'examining critically' (Guthrie, 1981, p. 155). What is the difference? It would seem that the

exetastic type of argument has more of a critical edge to it, while the peirastic type of argument is more of an information-seeking type of exchange. You could say perhaps that the exetastic type of argument is closer to the dialectical type of argument, or shares something of its nature, because it involves criticizing a respondent's arguments, perhaps even by finding contradictions in them. In this respect, it seems to share something with dialectical argument. The peirastic type of argument, in contrast, even though it is 'testing or probing', may not involve the kind of criticism that one associates with dialectical argument.

In many cases of examination dialogue in trials, what is found is that the dialogue appears to be peirastic or even exetastic in nature. In peirastic cases, the expert is being tested in the dialogue, to see if she is well informed and can back up her opinions with evidence or arguments. In exetastic cases, the credibility of the expert is being attacked by finding apparent contradictions in her testimony and other logical problems, or by any means of casting doubt on her reliability, trustworthiness, or competence as an expert.

This fundamental question in the study of legal examination dialogue leads to even more fundamental questions within argumentation theory itself. How should the peirastic and exetastic types of dialogue be classified generally? Are they subspecies of information-seeking dialogue? Or do they represent some other type of dialogue distinct from information-seeking dialogue? Or are they mixtures of information-seeking dialogue with some other kinds of dialogue, such as persuasion dialogue?

This interpretation of exetastic arguments as being of a critical type can be found in other ancient sources such as the *Rhetorica ad Alexandrum* (1427b12–1428a17). *Exetasis* is described there as a highly critical type of argumentation in which an arguer is attacked as "not practicing what he preaches". Exetastic argument is defined as "the elucidation of intentions, acts, and words which are contradictory to one another or to the rest of a man's mode of life" (1427b13–1427b14). *Exetasis* involves an 'elucidation', which makes it sound 'probing', like peirastic argument. However, the aim of *exetasis* is the finding of contradictions in the other party's words, acts, intentions, or mode of life. This aspect makes it sound critical, in the sense of probing for faults or weaknesses that can be used against a respondent in argument. Exetastic argument sounds as if it corresponds very well to the circumstantial type of *ad hominem* argument cited in logic textbooks. In this type of argument, an inconsistency is found in the acts, intentions, mode of life, or other circumstances of a person as a basis for a critical questioning or refutation of that person's argument. The circumstantial *ad hominem* works by finding an inconsistency between what a person says and what he does – a kind of pragmatic contradiction. The account of exetastic argument given in the *Rhetorica ad Alexandrum* sounds quite similar: "He who is making an *exetasis* must try to discover whether either the statement which he is

examining or the acts or intentions of the subject of his inquiry are in any respects contradictory to one another” (1427b14–17). The kind of elucidation or probing that exetastic argument is based on is well described by the *Rhetorica ad Alexandrum*. It is to collect information on the habits and way of life of the person whom you are examining, to find the following kinds of contradictions: (1) instances where he has been someone’s friend, but then later been his enemy, (2) instances where he has done anything contradictory or (3) of a discreditable tendency, (4) instances where he might act in such a way as to contradict his former acts, and (5) instances where he has formed an intention that contradicts his former words (1427b17–26). The exetastic argument, according to this account of it, is based on premises reporting evidence drawn from a person’s life, past conduct, words, and intentions.

As noted above, almost nothing appears to have been written about the formal structure of examination as a type of dialogue until the formal model of Dunne, Doutre, and Bench-Capon (2005). However, it can be argued that there was a predecessor. It was shown in Chapter 4, Section 2, that four formal models of dialogue were constructed in Walton (1984) called CB, CB+, CBV, and CBZ. The first three types of dialogue were described in Chapter 4, but discussion of CBZ was reserved for Chapter 5. It can now be said that CBZ is interesting, because it can be seen as a formal model of an exetastic type of examination dialogue. CBZ was meant to represent persuasion dialogue, and there was little thought of applying it to examination dialogue or to legal argumentation in Walton (1984), but it does appear to have characteristics that combine examination dialogue with the persuasion dialogue that forms its basis.

CBZ is an extension of CBV that puts a burden on the questioner when she finds an inconsistency in the commitments of a proponent. The proponent has a chance to resolve the inconsistency, but in CBZ, the questioner violates the rule of the dialogue if she fails to ask the proponent to resolve an inconsistency that has appeared in that proponent’s commitment set. The locution rules, dialogue rules, commitment rules, and strategic rules of CBZ were presented in Walton (1984, pp. 257–60). The locution rules basically state that each of the parties can make statements, can withdraw commitments, can ask questions, or can make challenges asking for reasons to support a claim. There is also another type of move called a resolution (p. 257). Making a resolution move is a request that the other party select one or the other of a pair of propositions stated. The dialogue rules require that each party must take a turn making a move that replies to the move made by the other party in the previous round. The commitment rules govern the insertion of statements into a player’s commitment set and the removal of them from that set in virtue of a move made. In this type of dialogue there are two types of commitments in a player’s commitment set.

One type is called a light side commitment and is known to all parties in the dialogue. The other type is called a dark side commitment and it exists in the party's commitment set, but may not be known to that party or to other parties in the dialogue. The purpose of distinguishing between these two types of commitment sets is to model the notion of a statement that the party is implicitly committed to, even though he has not explicitly stated it at any previous move in the dialog. CBZ was meant to be a persuasion dialogue, and it can be classified under this heading because the goal of each participant is to prove his ultimate conclusion based on the commitments of the other participant.

CBZ has several interesting features that make it distinctive as a type of dialogue. One of the dialogue rules (p. 258) is that in answer to a yes-no question a participant must either affirm or deny the statement questioned, or alternatively he must reply that he is not committed to this statement. But if the participant says that he is not committed to this statement, but it is in his light side commitments set, he is caught in an inconsistency. If the participant is caught in an inconsistency, he can easily lose the game unless he can resolve it. Another rule is that if the participant claims to be committed to a particular statement, but the negation of that statement is in his dark side commitments too, then that negative statement is immediately transferred to the light side of his commitment set. Part of the strategy of the questioner is to probe into the dark side of the answerer's commitment set and find inconsistencies between the answerer's explicit and implicit commitments. For this reason, CBZ can be classified as representing a type of examination dialogue. For that is a common characteristic of examination dialogue. Probing questions are asked to find out about something that the answerer is committed to, and in some types of examination dialogue this probing procedure is carried out by finding inconsistencies in the answerer's commitments set. This kind of dialogue is very common in legal examinations and cross-examinations in trials, for example. Examination dialogue was not known as a distinctive type of dialogue in the argumentation literature of 1984, but it is not hard to see how CBZ does represent this kind of dialogue. It represents a curious kind of combination of persuasion dialogue and examination dialogue that could be said to model exetastic examination dialogue.

5.1. *Critiquing Dialogue in Computing*

The process of critiquing, of a kind that sounds very much like exetastic dialogue, has been studied in recent work in computer science. What has been the focus of interest here is the kind of exchange that takes place between a human user and a machine database of the expert system type. It is beneficial in expediting this type of dialogue if the human user can critically question the answers given by the expert system. Then the expert system should have the capability to reply to these critical questions and

offer explanations or corrections of its previous replies. Silverman (1992) has studied human–computer collaborative systems in which a computer and a human user interact as partners in order to perform a task together. Particularly interested in cases in which the one partner is an expert, Silverman aimed to construct collaborative systems that can reduce expert error and judgment bias (p. v). The kind of collaborative dialogue that is important for this kind of study is what Silverman (1992, p. 4) calls the critiquing process.

Critiquing involves a two-way communication, a mutual search for truth. Both the originator and the recipient of the initial criticism can grow and improve from the interaction. The criticism recipient benefits either from improving his task result or from increasing his credibility in the eyes of the originator. In the latter case, the criticism originator learns of his own erroneous judgment and grows through the exchange.

The criticism process is seen by Silverman as a dialogue that follows a cycle (p. 4). First the user produces a draft task result which has the form of an electronic document. It could be a plan, a document, a design, or a knowledge base (p. 117). Then the critic analyzes the task result, asks questions, and criticizes any errors found in the draft task result. If there are no errors, the cycle ends. If suspected errors are found by the critic, a further dialogue ensues in which the user may offer explanations, recognition of error, and proposed revisions of the task result.

What Silverman calls the critiquing process seems to correspond quite well to the exetastic type of examination dialogue, in which an account presented by one party is critically probed for errors and inconsistencies by the other party. But the exetastic type of dialogue is a subtype of information-seeking dialogue, according to the classification system proposed in this book. Silverman's account of the critiquing process, in some ways, makes it seem that it is not necessarily a type of information-seeking dialogue, but an independent type of dialogue in its own right, which can be attached to many other types of dialogue. Silverman writes (p. 117) that in the critiquing process, a critic can scrutinize "a document, a design, a plan, a knowledge base, or a finished lesson". A plan would presumably be the task result of a deliberation type of dialogue. A lesson would presumably be part of some kind of pedagogical discourse. A knowledge base could be lots of things, but might represent some base of factual knowledge or expert domain of knowledge. So it would seem from these remarks that the critiquing process could be applied to several different types of dialogue. On the other hand, Silverman writes (p. 117) that in all these instances, and in all instances of the critiquing process, the task result is some "form of knowledge" that the critic scrutinizes. In short, it is not easy to place Silverman's account of the critiquing process within the types of dialogue postulated by the new dialectic. But it is not clear that he sees it as being exclusively a subtype of information-seeking dialogue. Instead, he seems to see critiquing as being a

separate style of dialogue in its own right and as operating on many different other types of dialogue.

One way of attempting to make Silverman's theory of the critiquing process compatible with the classification of examination dialogue as a subspecies of information-seeking dialogue would be to invoke the concept of the dialectical shift. According to this suggestion, any type of dialogue can shift to an examination dialogue of the exetastic type. After the shift, the argumentation in the original dialogue can be subjected to critical questioning, error analysis, and probing in a subsequent examination dialogue of the exetastic or peirastic sort.

5.2. *Attacking the Credibility of a Witness*

When a witness presents testimony in court, the witness takes an oath to tell the truth. The presumption is, for the trier, that when the witness makes an assertion, it is evidence that the statement made may be assumed to be true. What is the justification for drawing such a conclusion? The justification is that it is presumed that the witness is in a position to know about the truth of the statement at issue and, although the trier is not in a position to know, the trier can judge the matter secondarily by questioning the witness. If the respondent is an expert witness, the trier is not an expert in this same field (presumably), but the trier can go by what the witness says. If the respondent is an eyewitness, even though the trier was not there to directly see the incident, the trier can go by what the witness says. The reason in both instances is that the witness is in a position to know the facts.

The argument from position to know has the following form, repeated from Chapter 1, Section 3.

Witness *W* is in a position to know about proposition *A*.

Witness *W* says that *A* is true.

Therefore (as far as is known) *A* is true.

The qualifier in the conclusion is important. Argument from position to know is a presumptive and defeasible form of argument. If the premises are true in a given case, it follows that the conclusion is plausible, meaning that it has probative weight in a case as a reasonable presumption, but it could be subject to defeat once further evidence comes into the case. In other words, the bond between the premises and the conclusion is imperfect, and can be broken by raising questions in a dialogue.

One way to raise questions about witness testimony is to attack the credibility of the witness. If nothing is known about the witness, the assumption by the trier is that what the witness claims in her testimony will carry probative weight. In other words, any witness will have a normal degree of credibility. She testifies under oath, and the presumption is that what she says is plausible, because she is in a position to know. But if certain kinds of findings about the witness are brought forth, this new information may lead to lowering of

the credibility of the witness. Such a lowering of credibility will then lead to a plausibility readjustment. In other words, the plausibility value attached to the claim made by the witness will be lowered. But how does this process work, from the viewpoint of argumentation theory?

How this process of plausibility readjustment works is that in any use of argument from position to know, the witness will have an initial degree of credibility. Let us use a scale from zero to one, where zero represents no credibility at all and one represents perfect credibility, which would be a greater degree of credibility than should be assigned to any human source. Let us use the same scale to represent the initial degree of plausibility of the statement vouched for by the witness. Some statements are initially very plausible, while others are not. For example, if the witness said that the person observed made a leap that matched the current Olympic record, and the person observed was no Olympic athlete, the claim would not be very plausible. So initial plausibility can vary, depending on the statement made and its circumstances. But whatever the initial plausibility value of a statement, once it has been made by a witness, there will be a presumption in favor of the truth of the statement, depending on the credibility of the witness. Normally, the credibility of a witness would be on the high side, assuming she was in a position to know. But certain kinds of evidence can be used to attack the credibility of the witness. The logical outcome of such an attack is a lowering of the plausibility value attached to the claim made by the witness. The *credibility function* takes as its input value the degree of credibility of the witness and takes as its output value the degree of plausibility of the assertion made by the witness. So, for example, when the initial credibility value of the witness is lowered by some kind of evidence introduced into a case, then the plausibility value of the proposition asserted by the witness will be lowered to the same degree. The credibility function is a vitally important aspect of evaluating position to know argumentation.

Now the question is raised – what evidence can be used to attack the credibility of a witness? Basically there are two main kinds. One is evidence that the witness is not really in a position to know. The other is evidence that even if the witness may have been in a position to know, she is not telling the truth. The most central evidence in the second category is evidence that the witness is lying. Hence the honesty of the witness, sometimes called ‘character for veracity’, is the focus of this kind of argumentation. But there are many kinds of evidence that may be used to suggest to the trier that the witness may not be telling the truth. For example, it may be argued that the witness is biased, and this evidence of bias may be used to throw doubt on the credibility of the witness as a reliable source.

As shown in Chapter 1, the chief type of argument used by one participant in a dialogue to attack the credibility of the other party is called the *argumentum ad hominem*. It has three main types. In the direct type, the one party attacks the ethical character of the other party, and then uses that

attack on the other party's credibility to attack his argument. In the circumstantial type, the one party finds some inconsistency in what the other party says or does, and then uses that finding of inconsistency to attack the other's credibility, and thereby attack his argument. In the bias type, the one party shows evidence that the other party has a bias, and then uses that to attack the credibility and the argument of the other party. In legal cases, this use of *ad hominem* argumentation is called 'impeachment' of the witness. It is an attack on the credibility of the witness by arguing that the witness is not a reliable source of testimony.

What is especially interesting about argumentation of the kind used to bring the credibility of a witness into question and thereby throw doubt on her testimony is that there can be dialectical evidence of this kind. The questioner can ask a series of questions of a witness such that the witness impeaches himself in the conversational exchange. For example, the witness may be led to contradict what he said in previous testimony. If one proposition is the opposite of another, it is not logically possible for both to be true. The conclusion the trier must draw is that at least one statement asserted by the witness must be false. Therefore the testimony of the witness cannot be wholly reliable. This kind of questioning throws doubt on the credibility of the witness. There are also variants on the same argumentation. For example, suppose that the questioner can show that the assertion made by the witness is false or highly implausible. This kind of finding will also sow doubts in the mind of the trier, because it makes the hypothesis that the witness was lying or mistaken seem plausible. But if there is reason to suspect that the witness was lying or mistaken, doubts are raised about the credibility of the witness.

All such *ad hominem* attacks on credibility are defeasible and suppositional in nature. They are not direct evidence that can be observed or duplicated by the trier. You might even say that they are all subjective. So you might even think that from a logical point of view, it would be a mistake to attach too much importance to them. Such a skeptical view is justified in cases where so-called hard or objective evidence, of a kind that is scientifically verifiable or falsifiable, is available. But the key problem with many trials is precisely that such evidence is not available or is not complete enough to be decisive. In fact, it is highly typical of trials that much or nearly all of the evidence is based on witness testimony. In a criminal trial, the event in question is in the past. It cannot be duplicated. And so, inevitably, the evidence brought forward on both sides consists mostly of eyewitness testimony and expert opinion testimony. The expert witness is likely to be a scientist of some sort, but the trier of fact is not in the position of having direct access to the scientific evidence itself. The trier must depend on the scientist to present and explain the evidence in layman's terms. The trier, in short, depends on the credibility of the scientist. Expert scientific evidence in court is based

on the credibility of the witness. In short, a critic may discount the kind of argumentation discussed here as subjective. And in a way, it is. But in a typical trial, that is most of the evidence. From a legal point of view these subjective types of argumentation are extremely important. They are rightly classified as evidence in law.

What is important to see is that dialectical testing of credibility by a process of question and answer can be a source of evidence. The reason that it is relevant evidence is that it can function as a way of testing the reliability of the information furnished by an informant. This kind of evidence can be extremely important in a court because, in a trial, there is a conflict of opinions, and there may be plausible arguments on both sides. In a trial, a burden of proof is set, so the conflict can fairly be resolved, one way or the other. So, in a trial, there is a balance of considerations. But even a small amount of evidence – for example, some evidence based on fallible witness testimony – can swing the balance of consideration in the body of evidence as a whole from one side to the other. So the testing of argumentation based on witness testimony, while it may be subjective and fallible as evidence, can be important as part of the whole body of evidence in a case.

6. Examination in a Trial Setting

Much of the discourse in legal examination of witnesses in trials does appear to be fairly straightforwardly of the information-seeking type. By asking a series of questions, the attorney tries to get the witness to provide information that is relevant to the case being tried. Suppose, for example, that an eyewitness to a robbery is brought in to testify, and his description of the robber does not agree with the description of the defendant. The relevant information that the examining attorney will want to elicit from the witness is the description of the robber that he knows the witness has. The attorney already has this information, but his aim is to get the witness to present it to the court. The dialogue between the witness and the examiner in such a case might appear to be a straightforward sequence of information-seeking dialogue.

6.1. *Example of Critical Examination of Witness Testimony*

As an illustration, however, let us look at a slightly more complex kind of case. In this case (Sandler and Archibald, 1997, pp. 5–6), a police officer is on the witness stand. The officer does not recall the description of the robber, which was related to him by an eyewitness. But another officer, now deceased, had made notes of the description given by the witness. According to these notes, the robber was a tall man, while the defendant was five feet four. The aim of the examiner is to bring out this discrepancy. Specifically, the goal of the defense counsel is to use the police officer's report, in his

notes, to “refresh the recollection” of the witness on the stand. Sandler and Archibald (1997, pp. 5–6) present the following dialogue sequence to represent the examination sequence.

- Q: Officer, what time did you arrive at the scene on the day of the incident?
- A: Around 10:30 A.M., five minutes after the robbery.
- Q: What, if anything, did you do upon arriving at the scene?
- A: I conducted a routine investigation.
- Q: What did the investigation consist of?
- A: Interviewing the witnesses, inspecting the crime scene to see if there was any evidence left by the robber, and calling for the crime lab.
- Q: Did any of the witnesses furnish you a description of the assailant?
- A: Yes, one witness did.
- Q: Tell us, please, what description did that witness give of the robber?
- A: I don’t remember.
- Q: Is there anything that could refresh your recollection as to the description given?
- A: Officer Smith, who is now deceased, accompanied me to the scene and recorded the statements of all witnesses. His report might help me remember.
- Q: Did Officer Smith also record in his offense report the description of the one witness you referred to?
- A: I believe he did, yes.
- Q: I show you what purports to be a police report and ask you if you can identify it.
- A: This is Officer Smith’s report.
- Q: Please read the report to yourself, officer.
(Officer reads the report.)
- Q: Is your recollection refreshed?
- A: Yes, it is.
- Q: Now sir, tell us what description was given of the robber by the one witness who offered a description.
- A: John Peabody described the robber as a tall thin man approximately six feet in height with a mustache and long curly hair.

This kind of case presents a problem for the defense counsel, because a hearsay declaration by an absent witness is generally not allowed as evidence. But the hearsay doctrine is subject to exceptions. Also, there are many precedents in Anglo-American law that allow a witness to refer to his or her notes for the purpose of refreshing recollection (Sandler and Archibald, 1997, p. 6). However, the law holds that the “memory aid” is not itself evidence. It is only used for “triggering recollection” (p. 7). And the opposing counsel can cross-examine the witness to show that his memory is not reliable.

In this kind of case, the witness has some information, but he does not currently recall it. What the attorney must do is to get access to that information indirectly, by refreshing the memory of the witness. The defense counsel knows that using the notes of the deceased police officer to refresh the memory of the other police officer is allowed by the rules of evidence, even though there is a danger that it could be classified as hearsay. So what the defense counsel must do is clear. He must ask the right sequence of questions to refresh the recollection of the witness. Then the witness will present the relevant information about the height of the robber. Once that information is presented to the court, an inference can be drawn. Since the defendant is a short man, and the robber was a tall man, the plausible conclusion is that the defendant is not the robber.

6.2. *Embedding of Information-Seeking*

In most cases, when an attorney examines a witness in court, she is not trying to extract information that she does not currently possess. Examination in a trial is not that sort of information-seeking dialogue. Much of the process of information seeking tends actually to take place before the trial begins. According to Herman (1991, p. 52), "Finding the exact information and supporting facts on which to base direct and cross examination must begin long before trial." So examination in a trial is a complex sort of information-seeking dialogue. Although the examiner already possesses the information, in many instances, she is still trying to extract it from the witness, in order to present it to the court. On the other hand, sometimes the witness will say something that the examiner did not anticipate. This new information may come as a surprise to the examiner – in some cases an unpleasant one. What the attorney will try to do is to collect as much relevant information about the case as possible before the trial even begins. Then she will be in a position to control the flow of information that comes out during examination of the witnesses and to avoid unpleasant surprises.

Very important in studying examination dialogue in a trial is the occasional embedding of another type of dialogue in information-seeking dialogue. This embedding occurs when objections are raised about how the information-seeking dialogue is being conducted. The lawyer examining a witness is basically having an information-seeking dialogue with that witness. But there is always the possibility that the lawyer for the other side will raise objections to the questions asked or to the answers given. The purpose of raising an objection is to influence the flow of information into the main dialogue. As Park et al. (1998, p. 71) put it, "The trial lawyer uses the objections to the form of the question to influence the flow of information to the jury." Thus although the model of information-seeking dialogue is useful when applied to examination in a real trial, it is too simple. The wider reality of the trial intrudes, because more than just two parties, the questioner

and the respondent, are involved. The lawyer for the other side occasionally intrudes into that dialogue by raising objections, and the judge will then make rulings on the objections. This kind of intrusion turns on procedural trial rules. Basically an objection is a claim that the proper rules of procedure are not being followed. The intrusion is a kind of metadialogue, or a dialogue about the first dialogue. It links the procedural rules for a trial, such as the rules of evidence, to the information-seeking dialogue that takes place in witness examination.

7. Cross-Examination

The distinction between examination and cross-examination does not always coincide with the distinction between examination of a so-called friendly witness, a witness whose testimony supports the examiner's side, and examination of an unfriendly or so-called hostile witness. By convention, cross-examination is defined as the examination by the other side following the prior examination by the first side. Thus the distinction is not a matter of the hostility or friendliness of the testimony that defines it. It is a matter of one side following the courtroom turn-taking procedure of getting an opportunity to examine the witness next. Park et al. (1998, p. 31) define cross-examination as the questioning of a witness by a lawyer other than the lawyer who called the witness to testify. Cross-examination tends to be a hostile sort of questioning, but it is not necessarily so. For as Park et al. (1998, p. 31) point out, when one lawyer has conducted a direct examination of a witness, the subsequent examination by the lawyer for the other side is always called cross-examination, even if the witness is friendly to the side of the cross-examiner. Even so, cross-examination, because it often tends to be hostile, is typically a blend of adversarial attack with information seeking.

In Anglo-American common law, the trial is adversarial in nature. The presumption is that if the strongest arguments on both sides are heard by the trier of fact, a body of evidence will emerge, and the trier can then evaluate that evidence and judge who won the case. Another assumption, however, is that enough information will be collected so that the trier will come to learn the facts of the case. This information comes into the trial mainly through witnesses – expert witnesses and nonexpert witnesses who report facts, or things they witnessed. Now presumably, when a witness presents testimony, she is presenting information. Therefore, it seems reasonable to conclude that information-seeking dialogue is very important in a trial. It would appear that the success or failure of a trial depends on the accuracy and reliability of the information provided by the witnesses. What is important then is not only that the attorneys on both sides present their strongest possible arguments, but also that these arguments be based on evidence in the form of information that is largely provided by witnesses. Even in legal argumentation outside the trial setting, information is very important. It

seems fair to conclude that information seeking is an extremely important part of legal argumentation.

When a witness presents testimony in court, the process is one in which an attorney asks questions and the witness must provide answers or replies. When an attorney questions a witness testifying for her own side in the case, the process is called examination. When an attorney questions a witness testifying for the other side, it is called cross-examination. Initially, legal examination of this type seems simple enough as a type of dialogue. It seems to be easily classified as being a species of information-seeking dialogue. The attorney is trying to extract information from the witness. The witness is under oath to tell the truth. Therefore, the assumption is that the witness will present information in answer to the questions posed by the examiner. This assumption seems fair enough, as far as it goes, but immediately there are many complications and doubts. One complication is that certain questions – called leading questions in law – can function more like arguments than requests for information. Another complication is that the attorney who is examining a witness has the ultimate goal of advocacy – of winning the case. She is asking the questions. Therefore, it can be questioned whether the dialogue process in examination in a trial is really presenting information. Is it really presenting one side of a story more than another? Therefore, is it better classified as advocacy argumentation rather than just the presenting of information?

7.1. *Order of Asking Questions*

It can easily be seen by reading the classic account of cross-examination of Wellman (1936) that the attorney is not just seeking any relevant information when she examines a witness in a trial. She is trying to elicit information that supports the goal of advocacy for her client, and trying to avoid information that would have the opposite effect. The methods that are useful for this purpose derive from the fact that the attorney can choose which questions to ask, and what order in which to ask them. In cross-examination the attorney will prepare the case beforehand, and then use strategies to ask a sequence of questions in a prepared order. According to Wellman (1936, p. 131), a cross-examiner should never “hazard” an important question without “laying the foundations for it”. Wellman (1936, pp. 131) gives the following advice, showing the questioner how to use strategy.

If you have in your possession a letter written by the witness, in which he takes an opposite position on some part of the case to the one he has just sworn to, avoid the common error of showing the witness the letter for identification, and then reading it to him with the inquiry, “What have you to say to that?” During the reading of his letter, the witness will be collecting his thoughts and getting ready his explanations in anticipation of the question that is to follow, and the effect of the damaging letter will be lost.

The correct method of using such a letter is to lead the witness quietly into repeating the statements he has made in his direct testimony, and which his letter contradicts.

Then, Wellman advises the cross-examiner, once these admissions have been made, the witness can be confronted with the letter. Wellman (p. 131) even goes so far as advising the questioner to ask the witness to repeat his statement, to ask if it is correct as stated, and to add any qualifications or explanations he wants to make. Then when the exact opposite statement is read from the letter the witness admits to having written, the impact on the jury is "solid". Wellman (p. 132) even recommends that, to really drive the attack home, the attorney can ask, "Which statement is true?" No matter how the witness answers, his credibility has been undermined. Wellman's advice is that what is important in cross-examination is the sequence of questions, asked in a specifically planned order. The strategy resides not just in the asking of the questions, but also in asking them in exactly the right sequence.

7.2. Winning Strategies of Cross-Examination

Many interesting examples of the use of strategy to "win" in cross-examination of a witness are presented in Cohen (1973). Giving advice on how to cross-examine an expert witness, Cohen (p. 535) warns the questioner, "Never lose sight of the fact that he (the respondent) is your enemy." Cohen (p. 535) advises the examiner to stick to "short, direct questions that generally call for 'yes' or 'no' answers." Do not give the expert an opportunity to "run away with language he wishes to expound" (p. 535). Giving advice on how to show partisanship of the expert, Cohen (p. 537) suggests asking the expert how much he is being paid to testify, and even questions such as the following: "Doctor, you were aware, were you not, that you might not have been called to testify had your examination revealed some other opinion?" (p. 538). Schwartz (1973, p. 2003) postulates four objectives in cross-examining as to a claimed action.

1. To elicit undisclosed details favoring the cross-examiner.
2. To demonstrate that the witness lacked capacity, means, or opportunity to act as claimed.
3. To demonstrate that the details testified to are improbable or impossible.
4. To elicit other acts, statements, reasons, or motives which contradict or indicate contrary actions.

Schwartz presents many examples of relatively short cross-examination dialogues which, like those presented by Cohen, depict the questioner using all kinds of argumentation tactics to undermine and discredit the testimony of the witness.

Showing a contradiction in the testimony of a witness is a damaging form of attack. One statement or the other must be false. But even over and

above that, it suggests that the witness may be dishonest or confused. And neither of these implications supports the credibility of the witness as someone who is presenting true facts or reliable information. In some cases, even more direct personal attacks on the character of the witness are used as tactics of cross-examination. It is not too hard to see how exetastic argumentation specifically taking the form of the *ad hominem* argument can be an integral part of legal cross-examination. Stone (1995) has shown how clever sequences of questioning can be used in cross examination to lead a witness into a contradiction that will expose his poor character. The purpose of such a clever use of *ad hominem* argumentation is to raise questions about the credibility of the witness. Stone (1995, p. 165) presents a typical case in which the opening sequence of questions and replies runs as follows.

- Q: I won't keep you long Mr. Jackson, you probably don't enjoy being here, do you?
A: No, I don't much.
Q: Is it a new experience for you?
A: Yes.

If the witness has lied at his last move, Stone advises continuing the sequence of questioning by trying to make the witness emphatically confirm what he had already admitted.

- Q: So you've never been in court before.
A: Never.
Q: And so you've never been in trouble before.
A: No.

The next move for the questioner is to present evidence showing the previous convictions of the witness, "which he will have little choice but to admit" (p. 166). Now the witness has contradicted his previous testimony. In effect, he has been shown to be a liar, because it appears that he must have trying to conceal his previous convictions.

The purpose of using these tactics of cross-examination is to show that the witness has bad character. If a witness has bad character, that will detract from the plausibility of his testimony. But being a liar is a particularly relevant form of bad character, because it impugns the veracity of the witness. Once such dishonesty has been shown, according to Stone (1995, p. 166), "the credibility of his evidence will be in shreds." From examining such cases it is easy to see that cross-examination is not just information-seeking dialogue of any straightforward kind. It is highly critical and argumentative use of strategies of attack designed to refute the testimony of the witness, or make it appear to be implausible. What the questioner is trying to do is not simply to extract information, but to trap the witness in a contradiction that shows that he must be lying. The attorney is trying to attack the credibility of the witness. This type of dialogue does not appear to be information-seeking, or

certainly not purely that kind of dialogue. It looks as if what is happening is that the lawyer is trying to persuade the jury (or trier) that the respondent is not a credible witness by attacking his testimony and finding logical faults in it.

One interesting strategy used in examination of witness testimony is the use of incompleteness in a line of questioning to suggest a conclusion to the trier. A nice example of the use of this strategy has been presented by Drew (1990). The following dialogue was part of the courtroom cross-examination of an alleged rape victim. The version presented below is a simplified paraphrase of the more detailed transcript in Drew (1990, pp. 49–50).

Counsel: You say you received a number of phone calls from the defendant?

Witness: Yes.

Counsel: Isn't it a fact that you have an unlisted telephone number?

Witness: Yes.

Counsel: And you gave the defendant your telephone number, didn't you?

Witness: No, I didn't.

Counsel: You didn't give it to him?

Witness: No.

The argumentation in this dialogue sets up an apparent contradiction in the information elicited that poses a problem or “puzzle” (Drew, 1990, p. 51). The witness admits that the defendant telephoned her on several occasions. But she also admits that she had an unlisted number. But then she claims that she did not give him the number. The question is then posed – how else could he have gotten the number? The dialogue leaves the listener (in court – the trier) hanging. There appears to be no other obvious explanation of how he could have gotten the number. In the absence of any further information, the listener is led toward a way of solving the puzzle. The solution suggested is that the witness must have given the defendant her telephone number. The underlying logic of the solution is based on common knowledge of the normal ways and means of obtaining someone's phone number. The solution suggests, by implicature, a further conclusion. The conclusion suggested is the witness is probably (or plausibly) lying. The drawing of this conclusion, of course, has a negative effect on the listener's evaluation of the witness's credibility. It raises doubts on whether she is telling the truth.

The examination technique illustrated by this dialogue is based on what can be called the strategy of incompleteness. It illustrates both the Gricean notion of implicature and the argument from ignorance, or lack-of-evidence type of argument. It also shows how examination dialogue involves three parties – the questioner, the respondent, and a third party that plays the role of listener and evaluator. The third party does not speak in the

dialogue itself, but nevertheless plays a role by drawing conclusions from it. By leaving the dialogue incomplete, the examiner leaves the third party to the dialogue, in law the trier of fact, to draw a conclusion based both on what was said and on what was left unsaid. In some ways, this strategy of incompleteness is more effective as a means of argumentation than an explicit argument would be. It lets the trier fill in the gap himself by solving a problem. An indirect attack on the credibility of a witness by suggestion can be highly effective even if based on little or not hard evidence.

Another kind of tactic already mentioned that is permissible in cross-examination of an expert witness is to attack the credibility of the expert by alleging that she has a bias. The cross-examining attorney may ask the expert how much she is being paid by the other side to testify (Graham, 1977, p. 42). The expert may also be asked by how much this amount exceeds the statutory witness fee. If she has not been paid yet, the examiner may ask how much she expects to be paid (p. 43). It can be very damaging if a continuing relationship is shown (p. 44). For example, if it is revealed that the expert has often been retained by this attorney, or if it can be shown that the expert makes a living from giving expert testimony in court, these findings could damage the credibility of the expert as an objective witness. Partiality can suggest dishonesty, or even corruption, to a jury. So critically questioning the bias of an expert witness can be a very powerful form of argumentation in a trial. There are legal problems about exactly what kind of critical questioning of expert testimony should be permitted. According to Graham (1977, p. 39), the Federal Rules of Evidence “deal all the cards to the party preferring the expert witness.” Nevertheless, as indicated above, it is possible to attack the expert as biased, raising the critical question of the trustworthiness of the witness by various forms of questioning that are allowed. This line of questioning often amounts to an attack on the character of the witness. So it is clear that more than just information is being sought out by the questioner. The questioner is attacking the appeal to expert opinion by attacking the credibility of the expert.

8. The Purpose of Cross-Examination

An interesting issue is how partisan a lawyer should be when cross-examining an honest witness. Should she use clever tactics, such as trapping the witness in what appear to be inconsistencies in his testimony, even if she knows he is telling the truth? Let us call this question the clever tactics question. Lawry (1996, p. 566) answered the question by arguing that the purpose of cross-examination is to “catch truth” and not to “make the false look true and the true false”. This answer is based on a view of cross-examination saying that a lawyer should willingly accept the truth during the process, even if it damages his case (Lawry, 1996, p. 566). This view of cross-examination puts limits on the kind of critical probing that should be allowed or encouraged.

The view is presumptuous, and too idealistic, or at least so it can be argued from a dialectical perspective on examination dialogue. The main objection is the assumption that the lawyer knows the truth of the matter. This assumption is inimical to the notion of the fair trial, a proceeding in which the lawyer has the role of advocate, not the role of judge, or even the loftier role of knower of the truth. Thus the clever tactics question is itself a loaded question, assuming that the lawyer knows the truth of the matter at issue. This statement is not something that should be assumed, according to the peirastic theory of examination. Indeed, it is a dangerous assumption, according to that theory. The question needs to be reformulated and based on the assumption that the lawyer thinks the witness is telling the truth, where 'thinks' means he could be wrong. The answer to the reformulated question is that if the lawyer thinks the witness is telling the truth, then she should proceed on that basis. If she badgers an honest witness with clever attacks that attempt to discredit him, this could easily rebound, making the witness look like an innocent victim, and the lawyer look not very credible.

The question posed by Lawry only seems to make sense because of an assumed dichotomy between finding truth and using fallacious arguments and attacks that "make the false look true and the true false" (the ancient criticism of the sophist). The assumption is that the adversarial advocate is a sophist engaged in eristic dialogue and fallacies. The peirastic approach dispels the dichotomy. On this approach, the way to catch the truth, or to offer the trier a way toward finding it anyhow, is to examine the testimony of the witness in a probing way that tests it. The testimony can pass or fail the test. If what the witness says is the truth, then it is reasonable to assume that it will pass the test, though, of course, there is no guarantee of that. But if it is not tested, nobody will know whether it is true or false, or have any grounds for a reasonable opinion on the matter. In short, on the peirastic theory, the advocate should stick to what she does best and not start thinking she already knows the truth of the matter during the trial. Of course, none of this is to deny that the lawyer should have ethical principles. And none of it is meant to deny that a lawyer should show restraint in using fallacious rhetorical tactics that have no real function as part of a genuinely productive examination of a witness meant to test the probative worth of the testimony given by the witness.

This discussion of the clever tactics question raises a more fundamental question. What is the purpose of witness examination? On the peirastic theory, the purpose is to get information from the witness of a kind that can be used by the trier in reaching a decision based on rational argumentation. This information is not knowledge or truth, at least not necessarily. But it should be reliable information if it is to function as evidence in a trial. It should be information that can be tested, meaning that it should be probed into and criticized so that reasons for and against it can be revealed. Once

the information has been tested in this peirastic way by the questioner, the trier is in a position to see the reasons for and against accepting it as genuine information. Thus, in general, the basic purpose of cross-examination is to seek information. But is it to seek information that is useful for an anterior purpose. This purpose is to serve the needs of the critical discussion that is the main type of dialogue in the trial.

8.1. *The Limits of Dirty Tricks*

The thesis that the purpose of cross-examination is interrogation is one that needs to be discussed. In the adversarial trial, as opposed to the inquisitorial trial, the thesis that witness examination is a form of interrogation is not very plausible. For if you look at the trial from the viewpoint of the neutral trier, the purpose of examination should be to elicit the information, the so-called facts, needed to arrive at an informed decision on how to rule on the case. Such a decision needs to be based on the evidence – that is to say, on the relevant arguments put forward by both sides, each argument being based on what each side supposes are the facts of the case. But there is a more limited hypothesis linking the process of examination in an adversarial trial to the type of dialogue called interrogation. This hypothesis is the thesis that cross-examination is a type of dialogue that can be equated with interrogation of the witness. Park et al. (1998, p. 31) have stated this thesis succinctly: “Cross-examination is the interrogation of a witness by a lawyer other than the lawyer who called the witness to testify.” But is it really a good hypothesis to classify cross-examination as a type of interrogation dialogue? Initially, it seems too harsh, because cross-examination, following an examination of a witness by the other side, does not have such a one-sided type of dialogue as we would normally consider interrogation to be. The witness could be friendly to the side of the cross-examiner, and thus the dialogue would not seem like an interrogation. However, the usual cross-examination does not fit this pattern. According to Park et al. (1998, p. 31), the “usual purpose of cross-examination is to discredit the witness or diminish the impact, in some way, of the witness’ testimony.” Thus it would seem that although cross-examination of a witness in court does not always have to fit the model of interrogation, in the usual case it does, or at least does fit the style of the interrogation as a type of dialogue. But there is another aspect of the trial that needs to be considered. If the cross-examiner uses the kinds of deceptive tactics of the kind associated with the interrogation, the counsel for the other side can raise objections.

If a cross-examiner uses fallacious arguments or other tactics that may influence a jury even though they go beyond the limits of being appropriate for even a very probing and critical cross-examination, it is up to the opposing counsel to object. It is also up to the trier to restrict such performances by applying the rules of evidence. In order for a common law trial to be

successful, then, certain requirements have to be met that are not characteristic of an interrogation. One is that there needs to be good advocacy by the lawyers on both sides. The other is that the trier, in some cases a jury, must be presumed to be capable of critical thinking skills of the kind needed to weigh the strengths and weaknesses of the arguments on both sides. If these skills cannot be presumed, the trial as an adversarial procedure makes no sense. Some would say that it has to be assumed that the trier has what is called 'common sense'. They have to be assumed to be familiar with argumentation in daily life, even though some may be more skilled at it than others.

Chief Justice Rehnquist, in his concurring judgment in *Daubert*, expressed a concern that judges would have to become "amateur scientists", and this concern seems to frame a choice between "easy Frye and difficult *Daubert*" (Redmayne, 2001, p. 112). Frye is easy to rule on because it defers to what is generally accepted in a science, whereas *Daubert* is difficult to rule on, because the judge has to try to probe into the scientific basis of an expert scientific opinion. The worry is that *Daubert* makes the job of the judge, not to mention that of the jury, too hard, as an evaluator of the worth of scientific evidence. But looking at the situation realistically, there is really no choice to be made. Appeals to expert opinion are very common in everyday argumentation as well as in the courts, and the more difficult kinds of cases need to be dealt with if one is to arrive at an informed decision on what to do in a deliberation. When you go a dentist or doctor, you will not come out of the decision you have to make about your treatment very well unless you listen well, collect the relevant information, and ask the right questions, possibly getting a second opinion as well. Similarly, to deal with the more difficult cases in the courts where expert opinion evidence is important, the trier needs to take a peirastic approach and probe into the reasons behind the opinion, asking critical questions as well as collecting all the information you need. The adversarial system makes this job easier, for it is the advocates on both sides that do most of the work of probing into the reasons behind an expert opinion that has been offered as evidence in a trial. Still, in the end, the trier needs to follow the examination conducted by the advocate and to make judgments of which arguments are weak and which are strong.

Note that throughout the whole process of the fair trial, it is not being assumed on the peirastic approach that any of the participants knows the truth, or that the process at the end arrives at the truth. That is too lofty an aim, and in the end is too idealistic to be of practical worth. The purpose of the trial is to resolve the conflict of opinions that led to it. This goal is carried out by first of all giving a hearing to the views of both sides and the reasons they have, or can articulate, for holding their views. A second step is the testing of the strength of these reasons by examining them in court.

In Anglo-American law, the means of doing this is an adversary process in which the strongest arguments of both sides interact and are criticized by the opposing side. A third step in the process is the collecting of all the evidence furnished by this clashing of arguments and critical questioning, using this evidence to arrive at a decision on the outcome. Note that burden of proof set for the trial enables the outcome to be decided. To win, one side does not have to prove that its claim is true or that the claim of the opposing side is false. All either side has to show is that the argumentation on its side is strong enough to meet the requirements of burden of proof set for the trial at the beginning.

9. Interrogation as a Type of Dialogue

It was emphasized in Chapter 3, Section 5, that the critical discussion depends on the agreement of both parties to jointly undertake this kind of dialogue and to engage in a kind of argumentation that will move the dialogue along toward its successful completion. Agreement is especially characteristic of the opening stage. As noted above, the opening stage is defined as the stage where the two parties agree to attempt to resolve the dispute by expressing their points of view. The very opposite is characteristic of the interrogation as a type of dialogue. One party is pressured or even forced to take part in it, and does so reluctantly and under coercive conditions. The rules for the critical discussion also make this contrast clear. Rule 1 forbids parties from preventing each other from advancing a standpoint, indicating that putting forward one's standpoint is what one tries to do. In contrast, in an interrogation, one side is trying to impart as little information as possible, or certainly does not generally stand to gain by putting out lots of information, while the other side is trying to prevent the first party from concealing this information.

A catalogue of various tactics commonly used by police interrogators has been compiled by Inbau and Reid (1967, pp. 25–122), and comparable tactics are described by Royal and Schutt (1976, pp. 115–50), Buckwalter (1983, pp. 207–35), and Wagenaar et al. (1993, pp. 109–12). These tactics are psychological mechanisms which the police use to exert pressure in an interrogation, and to try to extract a confession, or to get some other kind of admission or relevant information. In Walton (2003), a list of the main tactics is presented that gives a good idea of the kinds of deceptive moves that are commonly made by interrogators. It is concluded in Walton (2003) that interrogation is an inherently deceptive and coercive type of dialogue that should be sharply contrasted with examination dialogue, even though the two types of dialogue have many elements in common. This contrast can be brought out much more precisely if we examine the rules for interrogation dialogue.

9.1. *Rules for Interrogation Dialogue*

In the system of Walton and Krabbe (1995, p. 149), there are four types of rules. Locution rules indicate the types of permissible moves. Commitment rules determine which statements are inserted into or deleted from commitment stores. Structural rules define turn-taking. They determine which moves are permitted or required after each move. Win and loss rules govern sequences of argumentation and determine what sequence of moves counts as fulfilling a participant's goal in a dialogue. They could also be called argumentation rules. According to the locution and turn-taking rules of the interrogation, the proponent mainly asks questions, and the respondent has a choice of answering each question or not. The proponent can ask questions that seek information, such as 'Is A true?' She can also ask why-questions that request an explanation of some fact. She can also ask why-questions requesting that the respondent justify some claim by offering support for it. The respondent can make other kinds of moves. He can ask for clarification of a question, or offer clarifications of his own previous answer. But his responses are limited mainly to giving answers to the proponent's questions. The proponent, on the other hand, can ask all kinds of questions, can put forward arguments, and can criticize the respondent's answers. She often probes into the respondent's answer by examining it critically. Thus the locution rules give more freedom to the proponent.

The turn-taking rules show an asymmetry between the freedom of the proponent and the respondent. Each rule limits how the respondent can reply to the proponent's previous move in an interrogation.

Structural Rules for Interrogation Dialogue

Rule for Yes–No Questions: When the proponent asks a question of the form 'Is A true?' the respondent must answer 'Yes', 'No', or 'I don't know'.

Rule for Explanations: When the proponent puts forward a question 'Why A?' requesting an explanation of statement A, the respondent must offer an explanation-attempt, or admit he cannot explain A.

Rule for Arguments: When the proponent asks the respondent to justify a statement A that the respondent has claimed or accepts as true, the respondent must provide an argument that has A as its conclusion.

Rule for Inconsistency: When the proponent finds an inconsistency in the previous answers of the respondent, and asks the respondent to resolve it, the respondent must do so at the next move.

Rule for Counterarguments: When the proponent puts forward an argument with conclusion C, the respondent cannot reply with any argument other than one that has the negation of C as its conclusion.

These structural rules indicate much of the source of the one-sidedness of interrogation as a type of dialogue. The respondent is on the defensive.

His possible replies only include a limited range of options, always in direct response to the previous move of the proponent. The proponent is in the driver's seat, so to speak. She controls the questions asked, and her questions lead the dialogue forward. These rules exhibit a sharp contrast with the freedom allowed by the structural rules of a critical discussion.

The goal of an interrogation is to get information from a party who has it, and who may be trying to conceal it, and who, at any rate, is likely to be reluctant to give it out. But just getting information of any sort is not characteristic of an interrogation. The interrogation is an attempt to get some information needed for a specific purpose. It may be information that is needed for a practical purpose, for example, to save lives, in the case of the interrogation of a terrorist, or in a military case of prisoner interrogation. Or it may be police interrogation, where the purpose is to get evidence, for example, evidence of the kind needed in a criminal investigation. When the police interrogate a person whom they strongly suspect of having committed a crime, their aim is to extract a confession. Canadian police use an interrogation technique called the Reid method that uses deceptive tactics to achieve this aim (Disclosure, 2003). In the interrogation of a terrorist, the ultimate purpose is to take action of some sort. For example, the purpose may be to foil a terrorist plot. In such a case, the interrogation is an information-seeking dialogue that is embedded in a deliberation dialogue. In other words, the agency undertaking the interrogation is trying to achieve some practical goal, and is thus trying to get information needed to achieve the goal. Intelligent deliberation is often based on information needed to find out what is happening or has happened, because directing a plan of action is only possible to the extent that the circumstances are known.

Because of its embedding into a deliberation, the rules for interrogation dialogue are not based on agreement and are not collaborative in the way that the rules for a critical discussion are. First, each party must decide what he or she wants out of the dialogue. The respondent may simply want to conceal the information he possesses. But he may be willing to let some of it out, perhaps in a distorted form, in order to get a lighter sentence or to prevent harm to himself, for example (Levy, 1999). Thus he needs to decide what he can trade off versus what he must try to conceal. The interrogator must decide what information is really important to her, and then she must try to get that, even if she does not find out other things that would also be of interest. Then the dialogue takes the form of a tug of war to get or conceal this information. Thus an interrogation frequently shifts to a negotiation type of dialogue. The interrogator, for example, may argue, "If you tell me this, I'll give you that". Or the respondent may bargain by arguing, "If you give me this (e.g., freedom, or immunity from prosecution), then I'll tell you that".

Thus interrogation as a type of dialogue does not depend on the agreement of the participants in the way the critical discussion does. And it tends

to shift into deliberation and negotiation dialogues, and to be based on embeddings into these other types of dialogue. Thus the goal of an interrogation is not just to get information, but also to get it for some prior purpose or use. Accordingly, interrogation does not have rules that are similar to those of the critical discussion. But it does have rules of a more practical sort that express goals and practical strategies of the participants. It is an assumption of the interrogation that the interrogator has some means of extracting information at her disposal, but also that these means are limited. For example, they may be limited by law, or by international agreements. If she oversteps these allowed means, the information may then become useless. At the opening stage, the respondent must decide whether to remain silent, and not take part in the interrogation at all, or whether to take part in some fashion. Of course, in some cases the respondent may be quite willing to participate, and may want to give the information to this interrogator. But in the normative argumentation rules formulated below, it is assumed that the respondent does not want to give out the information, or at least all of it, but wants to appear compliant by taking part in the dialogue.

Argumentation Rules for Interrogation

Rule 1: The respondent needs to take care not to inadvertently say something that might give out the information he wants to conceal, or allow the proponent to infer it.

Rules 2: The proponent may coerce the respondent to reveal information through threats or sanctions, but only by the means allowed.

Rule 3: The proponent needs to pose questions to the respondent, and these questions can, and often should, be leading, loaded, and deceptive.

Rule 4: The respondent should answer in formulations that are vague, ambiguous, misleading, or confusing, if that will help serve his ends.

Rule 5: The proponent should probe critically into the respondent's prior replies and try to use them to extract information.

Rule 6: The respondent should take care to try to be consistent in his replies and in the commitments that can be inferred from them.

Rule 7: If the proponent finds inconsistencies in the respondent's commitments, or implausible statements, or statements that are inconsistent with information from other sources, she should ask questions that critically examine them.

Rule 8: If the proponent extracts the information she wants from the respondent, then she has achieved her goal and the dialogue concludes in her favor.

Rule 9: If the proponent terminates the interrogation without getting the information she wants, and the respondent preserves his interests, the dialogue concludes in the respondent's favor.

Rule 10: The two parties can use any arguments, even ones considered irrelevant or fallacious from the viewpoint of a critical discussion, to achieve their ends.

The proponent has the power to decide when the interrogation will actually end. However, from a normative point of view, it ends when the objectives of the parties have been attained or not. Thus it can be seen that the interrogation is a deeply adversarial type of dialogue. One party tries to conceal the information the other tries to obtain. There can be collaboration, especially as the dialogue shifts to negotiations where trade-offs and compromises are made. But the whole dialogue is based on an opposition between the goals of the two parties.

9.2. *Interrogation Contrasted with Examination*

One can see that argumentation in a critical discussion is quite different from that proper for an interrogation. Rule 1 of the critical discussion says that parties must not prevent each other from advancing or casting doubt on standpoints. In a critical discussion, both sides must be free to advance the strongest possible arguments to support their positions. In the interrogation, the questioner directs the questioning, whereas in a critical discussion, both sides share control. Each must bring forward arguments and question the arguments of the other party. Both sides must be free, as the first rule indicates, and both sides must actively take part in the argumentation. Only if both sides are active advocates in supporting their own arguments and criticizing the other's arguments will the strongest arguments on both sides interact. In an interrogation, the situation is quite different. One side merely submits to the questioning of the other, and has little scope for defending its own account, much less for critiquing the viewpoint and arguments of the interrogator. The interrogation does not seem to be a good format for open two-sided argumentation. It is more of a device for extracting information from the respondent in order for this information to be used later for some purpose.

Both interrogation and examination are information-seeking types of dialogue, but they are inherently different in how they go about extracting the wanted information. In Anglo-American law, it would be highly misleading to categorize direct examination of a witness in a trial as being an interrogation of the witness, but the comparison becomes more apt in the case of cross-examination. In the adversarial model, a clear demarcation needs to be drawn generally between examination and interrogation. The latter is a much more coercive and one-sided type of dialogue in which all sorts

of threats, incentives, and tricks, such as the use of loaded questions, are accepted as components of the argumentation technique employed by the questioner. Much more careful restrictions on the use of leading questions, for example, are needed in examination of a witness in a trial. As stressed by Rule 611 of the FRE, reasonable control over the questioning of a witness is needed to make the examination effective for the ascertainment of truth. The truth comes out of such an examination by using techniques that probe into the testimony, bringing out the relevant information and critically testing the parts of it that are incomplete or implausible. The same kinds of techniques are of course used in interrogations, but in a different way that makes the dialogue markedly more coercive and one-sided. On the adversarial model, it is closer to a more accurate characterization of the relationship between the two types of dialogue to say that interrogation represents a form of examination that can almost be thought of as a pathological extreme. It represents the degeneration of examination into something else, something much less close to rational argumentation and closer to extraction of information by coercion and deception, where such tactics are necessary. Drawing the precise demarcation between examination and interrogation is not as easy as it looks, however. In practice, there are many cases of dialogue that could fall under both categories. At a higher level of abstraction, nevertheless, it is highly important for the study of witness testimony and examination to be able to distinguish between examination as one normative model of dialogue and interrogation as another.

Interrogation can even be viewed as the dark side of information-seeking dialogue. Interrogation is a one-sided type of dialogue in which the interrogator pushes ahead, dominating the dialogue almost unilaterally, sometimes even using threats and force to extract a confession or the desired information. This repressive, one-sided nature of the interrogation is precisely what should not be present in the normal freer type of information-seeking dialogue that is most often most useful for the collection of information. If an employment interview, a news interview, or another kind of information-seeking interview turns into an interrogation, that is a bad thing – a sign that the dialogue has deteriorated into something that is not an efficient or desirable way of extracting the information that is needed. In many instances of information-seeking dialogue, the best method of getting the right information is to let the respondent tell a story freely. Although the respondent may be guided and questioned during his telling the story, forcing the extraction of information by interrogation is not consistent with the peirastic theory of examination dialogue.

10. Classifying and Defining Peirastic Examination Dialogue

According to the new theory of examination as a species of information-seeking dialogue first presented in this chapter, examination can itself be

broken down into a secondary classification of types of dialogue. One is called the peirastic type of dialogue. In this type of question–reply dialogue, the testimony of the witness is collected as information and is also probed and tested against other known facts of the case. Any apparent inconsistencies in the testimony or with other known facts are explored, to see if they can be explained or resolved. The other type of examination is called the exetastic type of dialogue. The second type of dialogue is a more invasive, harsher, and more argumentative kind of examination in which the personal character of the witness may even be attacked. The exetastic type of dialogue is more critical in nature. In fact, it seems closer to a critical discussion than information-seeking dialogue normally seems to be. Doubts are raised about the truthfulness and plausibility of the testimony of a witness in this type of exchange. Much of the focus in exetastic dialogue is on the credibility of the witness. The character of the witness may even be the focus of the critical attack. The *ad hominem* nature of the argumentation used in exetastic dialogue was well brought out by the analysis of this type of dialogue in the *Rhetorica Ad Alexandrum*. The hard-edged and critical nature of the exetastic dialogue was made evident in this ancient treatment, as shown in the historical remarks in this chapter.

10.1. *Classification System for Examination Dialogue*

The clue to understanding how appeal to witness testimony is tested in legal examination dialogue lies in seeing that the argument is evaluated on two levels. The first is a kind of information-seeking dialogue in which the court tries to get the needed information from the witness. The basic goal is to extract that information so that the trier of fact can use it to reach an informed decision. But legal examination dialogue also contains a testing function similar to the kind of information-seeking dialogue in which a teacher puts examination questions to a student. The complex nature of legal examination dialogue is only understood once it is realized how the one level is connected to, and depends on, the other. The first function is just to get information. Presumably the witness is in a position to know, and can supply that information. But in a trial, being assured that what you are getting is genuine information may not be so straightforward. If there is evidence that the witness is unreliable, then as shown in Chapter 1, the appeal to witness testimony defaults. There may be indications that the witness may be lying, or that the witness may have made a mistake. Careful examination may show that she may have identified the wrong person, or failed to remember the facts accurately. So, in a trial, assurance is needed that the information gotten from the witness is true and that it really represents the facts of a case. But how is this goal of obtaining such assurance to be obtained? The answer is that the witness must be ‘tested’. Questions must be put to the witness to test out whether her testimony corresponds to the real facts of the case. In short, then, there are two levels of legal examination dialogue,

and the one supports the other. The first and foremost level is simply that of getting information from the witness. But because of the possibility that the witness could be mistaken or lying, the second level comes into play. This second level can be called the peirastic level. It has the function of testing out the answers of the witness, to get some assurance that they do represent the true factual information of the kind needed for the purpose of the successful trial.

But what sorts of questions need to be put to the witness to perform this testing function? And how does the testing function actually support the realization of the first function? To answer these questions, it is necessary to understand that there are accepted methods of testing what a witness says about some event that has happened in the past. The event itself cannot be repeated, because it is unique and is past. But we can test what the witness says against the testimony of other witnesses. We can test out the testimony of the witness against other evidence, in the form of nontestimonial evidence, such as photographic evidence, ballistics evidence, and so forth. We can even test out what the witness says against what else she said. That is, we can test the internal consistency of the testimony by finding apparent contradictions in it. The examination may then proceed from the peirastic level to an even deeper level of testing called the exetastic level. This type of examination combines information-seeking with a critical discussion. At this level the questioner can even challenge the credibility of the witness directly by questioning her character for veracity. The argumentation in this exetastic type of dialogue often appears to have a sharply critical edge. As shown in several of the examples of cross examination in this chapter, it can even utilize highly confrontational arguments such as the *ad hominem* attack. So now it is clear what kinds of questions need to be put to a witness in legal examination to perform this testing function. The examiner, and particularly the cross-examiner, must probe into the testimony of the witness and test it out by asking sequences of connected questions that are aimed toward performing one or more of the tests described above. And from studying legal cases of examination dialogue in actual trials, it can be seen that this form of verbal activity is well illustrated by what lawyers do.

Figure 5.1 sets out a classification of all the types of information-seeking dialogue discussed in Chapter 5.

The simple type of information-seeking dialogue can be illustrated by the passerby case. In the very simplest type of case, there is no anterior purpose, however. It is a simple transfer of a statement from one database to another. The exetastic type of dialogue is here defined as a subtype of examination (peirastic) dialogue in which dialectical testing of credibility is an essential and characteristic feature. On that basis, exetastic dialogue should be classified under the general heading of peirastic examination dialogue as a special subtype. But it also fits in various other places. It could well occur,

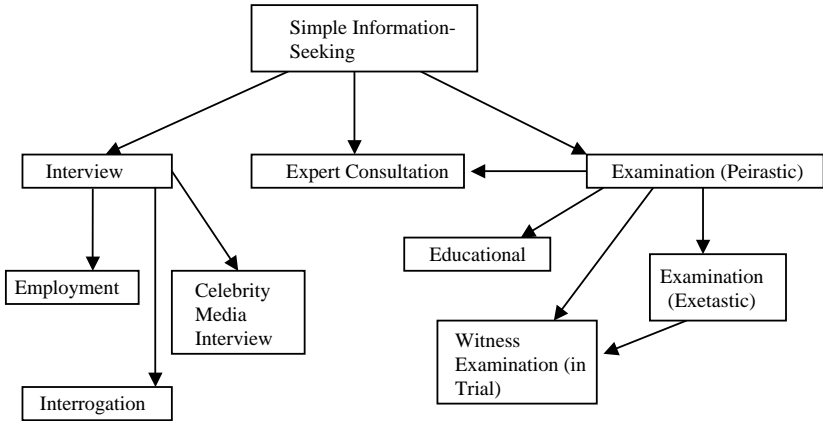


FIGURE 5.1. Classification system for types of information-seeking dialogue.

for example, in educational testing and in an interrogation. Obviously it is an important aspect of witness examination in legal argumentation.

The precise dividing line between peirastic dialogue and exetastic dialogue may be tricky to demarcate in specific cases, as there can be frequent dialectical shifts. In many cases, the main thing is to identify the framework of dialogue as one of examination, putting it generally into the peirastic type. If special account needs to be taken of its argumentative nature, as in cross-examination, the question may be raised of whether the dialogue is best seen as exetastic. It can be ventured as a firm hypothesis that the exetastic dialogue is more extreme than the peirastic type, has a harder critical edge, and that the use of *ad hominem* argumentation is particularly characteristic of it. Generally, cross-examination of a hostile witness falls into the exetastic category, while direct examination of one's own witness in a trial falls into the peirastic category. But unfortunately, this distinction is not an absolute one, and it is best to consider each case on its own.

10.2. Goal and Rules of Peirastic Examination Dialogue

What is the goal of the peirastic type of examination dialogue? The basic goal of the dialogue is the transfer of information that describes some event or at least offers an account of something the questioner needs to find out about. But the information must be an accurate and reliable account of the reality that supposedly is being represented by the respondent. The goal of the dialogue is to transfer this information from the respondent to the questioner. But within the dialogue, each participant also has an individual goal. The goal of the questioner is to get the information, or at least to get an account of what happened that is reliable, mainly by asking the right questions. The goal of the respondent is to get the information to the

questioner in a form that she can understand and use. The term 'use' is significant, because the information is typically needed for some purpose. Very often the problem is to engage in a deliberation to decide what to do in a situation of lack of knowledge, and the information is needed to make the deliberation informed and intelligent.

What are the rules of a periphrastic type of examination dialogue? The basic rule governing the moves of the questioner is for her to ask questions of a kind that will extract the desired information from the respondent. The questioner should generally avoid complex and loaded questions such as the spouse abuse question, but this prohibition is by no means absolute. Sometimes the questioner should ask yes-no questions, while in other situations she should simply ask the respondent to say in his own words what happened. Some questions should simply ask for information, but other questions need to test out information previously supplied by the respondent to see if it is reliable. Many examples of such questions have been considered already. The questioner may need to compare one answer with another to see if the two statements are consistent. The questioner may need to probe into the status of the respondent as a source, as an expert, for example, and may need to raise questions about the respondent's credibility. This takes us to the exetastic type of examination dialogue. The goal here is not just seeking information, but also critically probing into the account given by the respondent by looking at the reasons given to support a statement and by asking probing critical questions. Here the dialogue is more than information seeking, and has taken on much more of the tone of a critical discussion. There is much in the way of conflict of opinion that emerges, and arguments on one side are pitted against those on the other side.

The basic rule for the respondent is to give replies that are favorable to the information, as he knows it, getting across to the questioner. It is a presumption that the respondent is trying to carry out this goal. But any evidence to the contrary lowers the credibility of the respondent as a source of information who is in a position to know, and who is collaboratively taking part in the dialogue. Thus questioning the credibility of the respondent can be a relevant move for the proponent. No question or statement offered in reply to such a question can be evaluated by itself, apart from the sequence of questions and replies it is part of. Thus the job of evaluating such moves is best done by considering the profile of dialogue. Two rules that are central to examination dialogue of either the periphrastic or the exetastic sort are the rules of relevance that apply to the moves of each of the parties. The first is that the questioner should ask only relevant questions. The second is that the respondent should give only relevant replies. The respondent does not always have to give a direct answer, or even an answer at all. But he does have to address the request for information made by the question, by giving

the information, by admitting that he does not have it, or additionally, by saying where it can be obtained, if he has that information. The relevance of a reply is determined both by its addressing the question asked and by its place in the dialogue as a whole. The problem of how relevance should more precisely be defined is taken up in Chapter 7.

Applying Dialectical Models to the Trial

Chapter 1 portrayed appeal to witness testimony as a distinctive argumentation scheme with a matching set of critical questions. This approach implies that any given instance of an appeal to witness testimony in a trial needs to be evaluated in the context of a dialogue, in line with the goal appropriate for that type of dialogue. Chapter 4 outlined several different abstract models of dialogue that have been identified in the literature on argumentation theory and computing. Chapter 5 outlined the characteristics of one particular type of dialogue called peirastic examination dialogue that is new on the scene and has been very little investigated in the literature. The most visible and best established instance of this type of dialogue is found in the examination procedure used in our legal system to question witnesses and other participants in a trial. In Sections 6 and 7 of Chapter 5, the abstract model of peirastic examination dialogue was illustrated by features of examination in a trial setting. Now a large question is raised: How can we apply these abstract dialectical models to the existing institution called the trial in law?

What sort of dialogue provides the right framework for making witness testimony a form of evidence in a trial? In this chapter we will concentrate on the adversarial theory, embodied in Anglo-American law, where the opposed advocacy arguments of both sides offer the trier a basis for judging which side has the stronger argument, or a strong enough argument to meet the requirements of proof. Much of the analysis will also apply, however, to the inquisitorial theory, where a nonadversarial trier is supposed to collect all the facts and apply the law to them.

On either theory, it looks as if some sort of information-seeking dialogue has to be involved. Evidence comes to be introduced into a trial typically because a witness has information that is being made available to the court. This assumption is reflected in the rules of evidence. According to Federal Rule of Evidence 602, “a witness may not testify to a matter unless evidence is introduced sufficient to support a finding that the witness has personal knowledge of the matter.” The personal knowledge rule of evidence reveals

an assumption behind how witness testimony is supposed to be used as a kind of evidence in law. The witness is presumed to possess information, in the form of personal knowledge about the matter at issue. As shown in the analysis of witness testimony in Chapter 1, this presumption implies that an appeal to witness testimony presumes the possibility of a transfer of this information from the witness to the court. So there is a strong argument that can be made that appeal to witness testimony as a form of rational argument (evidence) requires an assumption about information transfer from one party in a dialogue to others. As shown in Chapter 3, typically the witness offers an account or story and the examiner asks questions that test the plausibility of the story. The problem is to show how the normative model of peirastic examination dialogue can be modified, expanded, or rethought in a way that could make it useful for helping us understand how witness examination in a trial can be a means of producing and evaluating evidence that is useful in the trial setting.

1. The Advocacy Framework of the Trial

The first point to be made is that there are more than two participants involved in most trial dialogues, in contrast with the abstract models of dialogue presented in Chapter 5, where, for purposes of simplicity, the dialogue is always represented as an exchange between only two parties, the proponent and the respondent. Clearly, as applied to many real cases of argumentation, especially legal argumentation of the kind found in a trial, this abstraction is a simplification. There are the lawyers for both sides; the trier, a judge or jury; the witness who offers testimony; and perhaps other participants as well. The witnesses take part in pretrial interviews and discovery depositions. At this stage, the lawyers for each side know the propositions to which the witness can be or cannot be compelled to commit herself. The questions on each side are framed to elicit the propositions that the lawyer for that side seeks to enter into that side's database. During the trial itself another participant in the information-seeking dialogue is the trier. Third, in metadialogues on evidentiary and procedural issues, it is the judge who must be persuaded. Thus any attempt to apply abstract models of dialogue to the institution of the trial has to take into account not only these additional participants, but also the different stages of the procedure including the trial and the dialogues leading up to it. Each dialogue is embedded into the next one that follows it in the sequence.

The theory formulated in Chapter 5 is that witness examination in a trial can be modeled as a species of peirastic dialogue that combines information-seeking dialogue with persuasion dialogue. The basic structure of the argumentation in a trial in the Anglo-American legal system is that of persuasion dialogue, subject to the qualification that this persuasion dialogue is only the central core around which a more complex dialogue structure is built.

Every trial is based around an initial conflict of opinions, and the purpose of the trial is to resolve that conflict by rational argumentation. The basic problem is that no human system can ever be perfect. The defeasibility of witness testimony was brought out very explicitly in the analysis of it as a kind of argumentation in Chapter 1. Participants in the trial may lie and use deception in their arguments. Interests are at stake. So participants may be biased and may not even realize they are committing logical fallacies. To try to deal as well as possible with such very serious problems, the Anglo-American legal system has two methods. The two basic means of fulfilling the purpose of a fair trial are the advocacy system and the rules of evidence. In the advocacy system, counsel is appointed to represent each side of the conflict, and the job assigned to each counsel is to represent his or her side by bringing forward the most persuasive possible arguments to support that side. Unrestrained, such an adversarial system would make the trial into an eristic dialogue. The function of the rules of evidence is to prevent that from happening and to see to it that the dialogue is a critical discussion, and not just a quarrel. The function of the judge is to see to it that the rules of evidence, and other procedural rules needed in a fair trial, are followed reasonably well. These tools can be seen as the means to try to use the persuasion dialogue in the trial to bring out information on what really happened, or on what the real facts are, to the extent that this task is possible. The problem is that only the witness is in a position to know what the real facts are. The problem is one of how to get access to what the witness knows. The event may have happened long ago. There may be contested versions of what really happened. All the usual practical problems of getting the information out arise. The notion of the fair trial is a way of trying to solve this problem.

On the adversarial model, the fair trial can be shown to be based on a subtle and clever underlying principle that makes it possible for it to lead to a rationally justified outcome, under the right conditions, based on a dialectical epistemology. The underlying dialectical assumption is that in an advocacy system both sides will use the strongest possible arguments that the information in the case permits. Each side not only will use the strongest possible arguments to support its own claim, but also will use the strongest possible arguments to attack and refute the claim of the opposed side.¹ But, a skeptic will ask, what kind of rational argumentation can come out of this clash of opposed arguments? To the skeptic, this clash of arguments seems to be nothing more than a quarrel. But there is more to the trial than just eristic dialogue. The clever underlying principle arises from the ability of

¹ This assumption depends on a number of practical requirements being met in a given case. For one thing, it assumes that each side has a good lawyer who has been trained properly and has the knowledge and experience, as well as the time and resources, to deal with the case competently and efficiently.

the trier, as a third unbiased party, to listen to the dialogue of the opposed arguments put forward by the advocates and to weigh the strengths and weaknesses of the arguments on both sides. Once the trial is over, the trier is supposed to remember all the relevant argumentation on both sides, and how each side interacted with the other side in the dialogue, and to sum it all up. When this argumentation is summed up, there will be one body of evidence on one side, and another body of evidence on the other side. The trier must then judge the weight of evidence on each side and decide which of the two has fulfilled the burden of proof set at the beginning of the trial.²

1.1. *The Function of Witness Testimony in the Trial*

What is the function of examination of witnesses in this advocacy framework of the trial? The answer is that the arguments on both sides need to be based on premises that arguably represent the real facts of the case. Indeed, much of the argumentation in a typical trial is about what the facts supposedly are. Generally speaking, there are two requirements for a good argument of the kind important in a trial. One requirement is that the conclusion should follow from the premises by an inference that is structurally correct. The other requirement is that the premises should be true. But of course, the problem in a trial, as well as in life generally, is that it is hard to be absolutely certain that premises are true. So we are justified in accepting a premise as true if it is supported by enough of the right sort of relevant evidence. It is this second requirement that pertains especially to information-seeking dialogue. Generally speaking, an argument is a good one if the premises are based on factual information. The better the information is – the more accurate, full, and up to date that information is – the better the argument will be.

The lawyer's questions in direct and in cross-examination should be, and ordinarily are, designed to elicit testimonial assertions of fact, not inferences that might be drawn from these facts. It might be set as an ideal model that in general the purpose of an examination is to elicit such testimonial assertions of fact. When an examiner invites a witness to testify to an inference that might be drawn from commitments, the opposing counsel may be expected to raise objections such as 'calls for a conclusion' or 'lack of personal knowledge'. The possibility of such objections and the way that examinations and cross-examinations appear to be designed in trials primarily to elicit testimonial assertions of fact support the conclusion that witness examination should be understood as information-seeking dialogue.

The principle stated here is that a critical discussion on a particular issue in a given case will be a better and more successful discussion if it is based on

² Another practical assumption in any given case is that the trier is capable of following rational argumentation and making a decision based on it.

the best information about the relevant facts of the case. For example, in a congressional or legislative debate about some issue – say, a proposed bill on housing policy – the debate will be much more productive if the participants are informed about the relevant facts on the housing situation, as affected by the bill. What is important is not only that the participants in the debate should use logical inferences and good reasoning. They should also base that reasoning on information that represents the real facts about the housing situation, as far as such facts can be found, collected, and presented to the debaters.

Now we come back to the trial and the function of witness examination dialogue in the trial. The function of witness examination is to make the argumentation in the trial based on premises that supposedly represent the real facts of the case. In other words, the argumentation in the trial is better to the extent that it is based on the fullest and most accurate information possible. But the problem is how to get that information and see that it is presented to the trier. Collecting the information is costly and may require all kinds of forensic skills, scientific collection of data, interviewing of witnesses, and clever detective work. Not only that, it may also be in the interest of one of the claimants not to make this information available, or even to try to hide it. There clearly is a problem here.

One way to deal with this problem is through the management of argumentation in the adversarial system. On one side, it is in the interests of the advocate not only to present as much information as possible that will seem to the trier to support her side, but also not to have information presented that will seem to support the argument of the other side. What is the likely outcome of this clashing of interest with respect to information? The likely outcome is that between the information presented by one side, and then the other side, during the trial, the trier will get a lot of relevant information. The reason is that if it is in the interest of one side for a particular item of information not to be presented, then it will be in the interest of the other side to bring that information out. In other words, both sides are highly motivated to dig up a lot of information, both to support their own view and to be able to criticize arguments that may be mobilized to support the other view. On any matter of relevant evidence, the counsel for one side or the other will have an interest in bringing that information out in court. The positive aspect of information-seeking in the epistemology of the trial in an advocacy system of justice has now been explained. The opposed interests of the two sides will, or so it is presumed, have the net effect of bringing out all the information by one side or the other. Both sides have a strong incentive to go out and collect relevant information, insofar as such information may prove useful in court. The positive aspect relates to the amassing of data as a basis for evidence.

The negative aspect arises from the everyday fact that much witness testimony turns out to not be genuine information. Typically, the main points at

dispute in a trial are about what the facts of the case really are. What is vital, especially in cross-examination, is to critically probe, or even to attack, the testimony of a witness. The negative aspect of information-seeking dialogue is the testing and critical questioning of the answers given in the dialogue, to judge their worth as information that represents the real facts of the case.³ Suppose a witness with a criminal record is given money as part of a plea-bargaining session, and falsely testifies that the accused took part in a robbery. And suppose that in the same case, a mentally disabled witness is led by series of suggestive questions in an interrogation session to claim that he saw the accused person taking part in the robbery. Suppose further that the accused party had no alibi, and that the evidence of these two witnesses strongly suggest his guilt. What needs to be done in such a case is a cross-examination of these two witnesses that questions both the plausibility of the story and the credibility of the witness. Suppose that during such a cross-examination, neither story holds up as plausible, and neither witness holds up as credible. By critically probing and testing what appeared to be information, and showing it not to be reliable as information, the cross-examination performed a negative function. It showed that what appeared to be information was not really plausible as an account of what happened. By removing this false information, the cross-examination opened the way for a more plausible account and explanation of what really happened. Negatively, then, the testing or probing of the testimony led to new information, or a more plausible account of what really happened.

It is through the negative aspect in particular that witness examination in a trial functions as a kind of information-seeking dialogue that is peirastic in nature. The trier of fact presumes that if a witness appears credible, then the testimony given by that witness represents information that is true and factual. But what if what one witness claims directly contradicts what another witness claims? The trier can only make up its mind whether to accept the one account or the other by judging the comparative plausibility of both accounts. The best way to do this is for the trier to pay careful attention to the critical probing and testing of each story in the cross-examination by the opposing counsel. The problem is to decide which account represents the 'real' or the veridical information. A lot of testimony that seems to be information, or is presented by a witness as information, may turn out not to be real information. The problem is to distinguish the real from the phony or 'false' information. False information may be defined, in this context, as a proposition (or set of propositions) that initially appeared to be information, but then was later shown not to be worthy to be accepted as information.

³ Frank (1963) advocated an epistemological view he called fact-skepticism, summarized in his statement, "The only absolute knowledge on which we can count is the knowledge that man's wisdom will never be absolute" (p. 425).

Some might agree with our basic thesis that witness testimony is a kind of information-seeking dialogue, but disagree with the secondary thesis that it is a species of peirastic information-seeking dialogue that also has the aim of critically testing the information received from the witness. Such a critic might argue that witness testimony should be seen as a pure kind of information-seeking dialogue without any persuasion dialogue being embedded in it. This critic might argue that the only persuasion dialogues that occur during witness examination are metadialogues in which the lawyer submits arguments to the judge concerning issues that need to be determined before the information-seeking dialogue can continue. What this objection overlooks is that the lawyer does not only ask the witness questions designed to elicit information in direct examination. The process is also designed to elicit a sequence of propositions in an order that will bring out a story, and the choice of the particular story to bring out is dictated by two factors. One is the overarching persuasion dialogue the lawyer has in mind as part of his or her general trial strategy. The other is that the type of story wanted is one that is plausible and that can stand up to the critical questioning of the other side. Cross-examination also may seem initially to be a kind of pure information-seeking dialogue in which the lawyer states the proposition she wants the witness to provide and the witness then merely confirms or denies this proposition. But this minimal account of cross-examination ignores the aspects of probing into the reliability of the account given, by testing it against other propositions accepted as factual, or even finding inconsistencies that could destroy the credibility of the witness.

According to the peirastic theory, witness examination can be modeled as a kind of information-seeking dialogue provided you look at the argumentation in a trial as a dialectical process, from a critical and normative point of view. As noted above in the discussion of cross-examination, the trier needs to act as a critical thinker who looks at both sides of the case and critically questions the weaknesses as well as the strengths of the arguments on both sides. Such an assessment combines both the positive and negative aspects of information-seeking. The arguments used in arriving at a decision need to be based on information. But what is the real or true information? Here the negative aspect of information-seeking comes in. The information-seeking dialogue is of the peirastic type, because what is important is not just the presenting of testimony, or what appears to be information, but also the critical probing and testing of that testimony to see whether it is real information or not.

So much for the trier's viewpoint. What can be said about the viewpoint of the attorney who is conducting the examination? The attorney is an advocate who is trying to win the case. When she examines a witness, therefore, she is not just trying to extract as much relevant information as possible. She needs to be much more guarded. She does not want to extract information that might tend to undermine her own case in the eyes of the trier. An attorney

will have an examination strategy – a plan of asking the right questions in the right order to build up her side of the case and make it strong. If the attorney regards examination as information-seeking, at best it is a selective kind of information-seeking. She wants to get the right kind of information to persuade the trier that she has a winning case. She wants to build up a body of evidence that will prove what she needs to prove in the trial. If this is information-seeking, it is information-seeking with a purpose in mind. That purpose is to persuade the trier. It has to be said then that the examiner may be trying to extract information from the witness, up to a point. But the examiner, as advocate, has an ulterior motive. The examiner needs to get some of the information presented, but not necessarily all of it. And the examiner wants to put a certain direction on the examination dialogue, so that it points toward one side of the case. Therefore, to see the examination process as being any simple or straightforward kind of information-seeking dialogue, looking at it from the attorney's point of view, would be highly misleading.

2. Three Components of the Trial

It is the argument of Chapter 5 that peirastic examination dialogue is the best dialectical framework in which to analyze and evaluate the probative weight of witness testimony as evidence in a trial. According to this theory, there are three aspects to how the argumentation in a trial should be configured. The normative framework of a trial needs to be first of all, and centrally, that of a critical discussion in which each side presents arguments to support its ultimate *probandum*. But second, the critical discussion needs to be an informed one, meaning that it needs to be based on the kind of information that can come in through witness testimony. The argument for the usefulness of this second aspect is that the trier is more likely to get a better idea of what the truth of the matter really is through the information that witnesses can provide. On this basis it is argued that ideally, in a trial, witness examination should be supposed to have the function of bringing out information. However, by 'information' is meant plausible factual commitments that are supported by reasons offered as arguments in a dialogue but may later be proven false or untenable as the dialogue proceeds. Hence the importance of the third aspect: evidence based on appeal to testimony needs to be tested through critical questioning as an examination proceeds. Thus the process of evaluation of witness testimony, of the kind that should ideally take place in a trial, is seen as a complex type of dialogue that is fundamentally peirastic in nature and, as such, is based on these three components.

2.1. *An Objection and a Reply*

A general problem inherent in the theory is how to understand the role of advocacy in legal argumentation, in relation to examination dialogue that

is supposed to elicit the ‘facts’ of a case. According to the theory, the best way to normatively model examination of witness testimony in a trial is as an embedding of an information-seeking dialogue in a persuasion dialogue. Such a model is deeply controversial for several reasons. Some will object to the model portraying the trial as basically a form of persuasion dialogue on the ground that it favors the adversarial theory of the trial too much. Others will object that the model is not adversarial enough. Trial lawyers tend to see the trial from an adversarial viewpoint and tend to be highly skeptical of the notion that the examination of a witness in court could be seen as a species of information-seeking dialogue. This objection is that it just seems terribly naive to view witness examination in trial as a process in which the questioner is seeking information. Experienced trial lawyers who see the trial as an adversarial contest can cite examples of argumentation in trials showing that witness examination dialogue in a trial tends to be aggressively argumentative. The questioner’s main aim seems to be to get admissions that support her side of the case. In doing so, she may, in many instances, actually be trying to see to it that information that may have the opposite effect is not brought out in the open before the court. Initial appearances of this kind strongly suggest the hypothesis that witness examination is not information-seeking dialogue. Examination of the sort typical in trials has a tactical component that strongly suggests that it is a kind of persuasion dialogue, rather than a kind of information-seeking dialogue. The objection posed is that if you look realistically at the lawyer’s task in conducting the examination of a witness in a trial, it would be a distortion of the real aim of that task to portray it as any sort of information-seeking dialogue.

Objection. From the trial lawyer’s point of view, as counsel in a case at trial, it is not practically useful to view examination as a species of information-seeking dialogue.

Trial lawyers as advocates are not only unwilling to accept the hypothesis that examination in a trial is information-seeking dialogue. They would be wrong to do so. They rightly see examination as an adversarial procedure and as highly argumentative in a way that information-seeking dialogue is not. They see the hypothesis that examination is information-seeking dialogue as naive. They cite the old maxim that a lawyer should never ask a question in examination dialogue that she does not already know the answer to. This maxim suggests that the asking of questions in examination is always strategic and adversarial. According to an article on techniques of cross-examination (Army Lawyer, 1998, p. 2), the three phases in organizing a cross-examination are finding what argument I am going to take, finding what “attack points” support the argument, and drafting questions that develop each attack point. It is clear from this account that the purpose of cross-examination, from the advocate’s point of view, is to argue to persuade

the trier. So it is not hard to see why any practicing attorney would say that viewing examination as a species of information-seeking dialogue is not a practical approach. It is not an approach that would be useful to an attorney in court to help to win a case. It is not a good examination strategy. It is not an approach that should be taught to law students who are trying to learn how to conduct an examination of a witness in a trial.

Reply. The reply to the objection has four parts, set out below.

1. The first part is a concession that the objection clearly has some truth in it, from the viewpoint of the trial lawyer. It would be naive and impractical for the attorney representing a client in court in our adversarial system to treat the questioning process as being a simple and straightforward kind of information-seeking dialogue which has the purpose of extracting all the relevant information on the issue at trial. The attorney, in this situation, is an advocate for her client. She only wants to extract information that is of use in building her case. This advocacy role is part of the adversarial system of Anglo-American law. This point is conceded, to some extent, but by no means entirely. Davies (1993, p. 91) discussed some limitations of the rule that a cross-examiner should never ask a question he does not already know the answer to. He suggests that this “so-called rule” is a luxury, and is not practical, because it “would result in a great many necessary questions not being asked” (p. 91). It is not always possible to know the answer to a question in advance. Hence limiting cross-examination only to questions for which you have an answer “will result in an ineffectual cross-examination” (p. 91). Another point is that different systems of law can work on the extraction of information in different ways. Anglo-American law is a highly adversarial system in which the testing out of witness testimony through cross-examination by the opposed side is rated as fundamentally important. The Continental system has fewer procedural and exclusionary rules, and so in this system, the witness is allowed to give a fuller story, without objections and exclusions that interrupt and circumscribe the account. In the Continental system, in which the judge questions the witnesses, there is no “American style cross-examination,” according to Van Kessel (1992, p. 71). But the American way of handling witness testimony in a trial emphasizes the testing out of what has been presented by the opposing side. Interpreting the Sixth Amendment’s confrontation clause, the U.S. Supreme Court found that this clause guarantees the defendant a face-to-face meeting with each witness and requires that testimony of the witness be subject to “rigorous adversary testing” (Van Kessel, 1992, p. 71). Each system, therefore, emphasizes a different aspect.

2. The second part of the reply is that it is important to look not just at the attorney's viewpoint, but also at that of the trier, as noted in Chapter 5. The trier has to make the so-called deliberations that result in a decision based on all the evidence presented at trial. In order to do this in a way that makes a trial successful, in any system, the trier must have the relevant information and must have enough of it to serve as a basis for arriving at an informed and rational decision. Or if you look at the trial from a wider viewpoint, say that of a judge, part of the purpose should be to bring the true facts of a case to light. According to the adversarial model, this aim can best be achieved through the confrontation of the arguments of both sides in a battle or fight. The problem with this view is that by using the terms 'battle' or 'fight',⁴ it embraces the eristic model. It is this very model that leads to problems by appearing to condone the worst excesses of the adversarial system. From the trier's point of view it makes more sense to see the examination that goes on in the trial as information-seeking dialogue.
3. The third part of the reply goes back to the lawyer's point of view again. It was conceded above that it would be impractical to view the process of examination, from the standpoint of the lawyer acting as counsel in a trial, as being a simple type of information-seeking dialogue. But a distinction now needs to be applied. It needs to be recalled that there are several different subtypes of information-seeking dialogue. The type that most obviously springs to mind with most people is represented as the passerby type of case. But as we have seen, although legal examinations in a trial are sometimes of this kind, most often they are not. Most often they have a peirastic or even exetastic component, giving the dialogue quite a probing, critical, and even adversarial aspect. When examination in a trial is modeled from the examining counsel's point of view, the dialogue needs to be seen as most often being of the peirastic type, or even in many cases the exetastic type. What is involved is not just questioning to extract information. The critical testing of the information, sometimes even by attacking the credibility of the witness, is an integral part of the dialogue.
4. Finally, a small but significant point needs to be made. It needs to be conceded that as a strategic maxim, it makes sense for the attorney in an examination be wary about asking a question to a witness that she (the counsel) does not already know the answer to. The same characteristic, it will be recalled, was also applicable to the kind of pedagogical information-seeking dialogue in which a teacher is giving

⁴ Frank (1963, p. 80).

a test to a student. The teacher already knows the answer, but asks it to see whether the student knows it. Similarly, in a legal examination of a witness in court, the questioner may already know the answer. Her goal may not be one of presenting all the information to the court. She wants to bring out the information that will support her client's case and that will stand up to critical scrutiny by the other side. But from a viewpoint of the trial as a whole, because both sides are represented, the intent is to use this adversarial framework to see to it that all the relevant information does come out. It is then up to the trier to look at the argumentation on both sides of the case, judge what the real information is, and arrive at a decision.

The dialogue exchange between the objection and the reply can be better appreciated by adding a commentary on the argumentation in it.

Commentary. The dialectic between the above objection and reply is vital to understanding the place of information-seeking dialogue in the examination of a witness in a trial in the Anglo-American legal system. When examination dialogue is being modeled as a species of information-seeking dialogue, you have to take a broad normative perspective on the trial as a whole process. The goal of the trial is to resolve the conflict of opinions postulated and agreed to as the issue at the confrontation stage (Feteris, 1999). The resolution process can then be regarded as a critical discussion passing through a confrontation stage, an opening stage, an argumentation stage, and a concluding stage (Feteris, 1999, p. 172). In a criminal case, the issue is whether the defendant is guilty as charged. There are two sides – the prosecution and the defense. But these are not the only two participants in the trial as a whole. There is also the trier – a judge or jury. And of course, there are other participants as well – notably the various witnesses that are called to testify. Thus the structure of the dialogue in a trial is more complex than that of a dispute in a critical discussion. As often noted in Chapter 5, there is a complex process involved in the argumentation in the adversarial trial, with many rules and participants. And yet central to the trial as an institutional means of resolving a conflict of opinions is the persuasion dialogue within it.

The upshot of this discussion is that the argumentation in a trial needs to be seen, first and foremost, within the normative framework of the critical discussion. But then we come to witness examination during the argumentation stage of the trial. This part of the argumentation in the trial needs to be viewed within the normative model of the information-seeking dialogue. However, it is a special kind of information-seeking dialogue called examination dialogue. The peirastic component in legal examination dialogue needs to be seen as very important, as so often emphasized in previous

chapters. The testing out of the plausibility of the testimony as evidence is a vitally important part of the dialogue that takes place between examiner and witness.

2.2. *The Viewpoint of the Trier*

In a trial, the examining attorney may have a very good idea of the information she wants to extract from a witness. But in order to get that information, and get the jury to draw the right conclusions from it, she may have to take an indirect route. To get the information she really wants, she may not be able to just put the question to the witness directly. Or at least, that may not be the best strategy. Instead, she typically elicits a body of information, a story. From this story conclusions can be drawn. By testing out the story, the examiner gets the trier to judge that the story is plausible or is implausible. From such a judgment, the jury then draws conclusions about the ultimate conclusion to be proved in the case. It is the need to get the trier to infer these conclusions that defines the target information for the examiner. So here we have a rather complex process, involving not only the collection of target information, but also its assessment through a process of questioning that can be highly adversarial.

The critical discussion model is adversarial in the sense that the goal can only be achieved if there is strong advocacy on both sides. But that is not the whole story. The trial cannot be just a quarrel. For the trial to meet many of the powerful criticisms of such a purely adversarial system, it has to be seen as an informed critical discussion in which both parties are informed of the relevant facts. Fact-finding is an important function of the trial. Thus the model must be a framework in which information-seeking dialogue is embedded in the persuasion dialogue. Of course, the big problem is how to define information of the kind that should be sought in an information-seeking dialogue. As shown in Section 1.1, we naturally tend to think of information in a positivistic way as ‘facts’ that are just out there, or in the head of a witness, and that need to be extracted by an interrogation process. But in Section 2 it was argued that this older notion of information is no good as a definition for the kind of information-seeking dialogue needed in a trial. Instead, we need to see information as reliable information that can be tested by critical questioning and that can have probative weight as plausible. The dialogue-based notion of testing information as evidence through critical questioning is hard for us to grasp at first, because of our modern positivistic inclinations to see information transfer as simply a moving of true propositions from one data base to another. However, it may help to see that there is some historical precedent for this dialogue-based notion of information transfer through questioning and testing.

In summary, it is vital to distinguish between two points of view on examination of a witness in a trial. One is the viewpoint of the counsel, who acts as questioner in examining a witness. The other is the viewpoint of the trier,

who must look at all the arguments on both sides, and all the evidence presented in the case, and then arrive at a decision. These two viewpoints are quite distinct. In modeling examination dialogue in a trial, careful attention must be paid to this distinction. From the viewpoint of the trier, the process of examining the witnesses in a trial provides the kind of information needed to arrive at a plausible account of what happened in the case and to arrive at a decision on the outcome of the trial. But the trier does not simply take what each says at face value. The trier listens to the examination and cross examination of each witness and then makes up her mind what to think about the acceptability of the statements made by the witness. What counts in the end is what the trier thinks about the believability of the statements made by the witnesses and what conclusions she draws from those statements in relation to the issue at trial. From this viewpoint, the process of examination is seen as an information-seeking type of dialogue, because it is from this source that the trier gets all her information about the case. Of course, that does not mean that just because a witness makes a statement, the trier will automatically treat the content of the statement as information, in the sense that it represents a true account of the facts. The trier has to be a critical thinker who looks at both sides of a case and decides what to believe, or to accept as plausible.

3. How Evidence Comes into a Trial

Park et al. (1998, pp. 4–8) distinguish nine stages of the common law trial. First is the pretrial litigation stage, including discovery, motions, and hearings. The second stage is jury selection. The third is the presentation of opening statements to the assembled court by lawyers for both sides. In the fourth stage, witnesses are called by the plaintiff and then examined by both plaintiff and defendant. The case may end here, but in the usual case, the defendant will present testimony of witnesses that will then be examined by both sides. In the fifth stage, each side has an opportunity for rebuttal, that is, “to offer witnesses and exhibits to rebut matters or discredit witnesses put forth” in the prior argumentation. There is a possible sixth stage. When rebuttal testimony has ended, either side can make a motion for judgment, meaning a ruling that “no reasonable jury could find in favor of the other party” (p. 7). The seventh stage is the putting forward of closing arguments, in which each side sums up its case. The eighth stage takes place when the judge instructs the jury on the law that is the basis for deciding the case. The ninth stage includes the deliberations of the jury and the verdict reached.

The way evidence enters into a trial is a multistaged process. Gordon (1995) has studied the argumentation in the pleading stage, where the issue is defined. Before the trial even begins, the attorneys on both sides are supposed to collect evidence. Much of this evidence will come from the attorneys’ interviewing the witnesses and the defendant. The attorneys

are supposed to share this evidence. One side is supposed to disclose the evidence it has found to the other side. One problem brought to public attention in a report in the *Chicago Tribune* (Armstrong and Possley, 1999) is that prosecutors in hundreds of homicide cases have concealed evidence they knew to be false, or concealed evidence suggesting innocence. The U.S. Supreme Court has declared that such conduct warrants criminal charges, but according to the *Tribune* report (p. 1), although at least 381 defendants have had homicide convictions reversed because of prosecutors concealing evidence, not one of these prosecutors has been convicted of a crime. Another problem is witness coaching, which occurs when a lawyer interviews a witness before a trial, and either knowingly or unknowingly implants certain suggestions in the mind of the witness that will later affect how the witness answers questions when giving testimony in court. Social science research (Loftus, 1979) has shown that new misleading memories created during the interviewing of a witness can “overwrite” or replace the original memories, with the result that the witness becomes convinced that she saw things a certain way when really she did not. In short, there can be problems with information-seeking dialogue in legal cases that occur even before the trial process begins. These problems may very much affect the information-seeking dialogue that later takes place during the trial.

3.1. *Questioning a Witness*

During the trial process itself, witnesses are examined by the attorneys in court. The witness takes an oath to tell the truth, and then the attorney who is conducting the examination puts a series of questions to the witness. The witness must answer the questions, and could be guilty of obstruction of justice if he failed to give an answer. On the other hand, if found to be lying, he can be convicted of perjury, also a punishable offence. It has to be realized then that the witness is in a hard place. Even if he does not like the question, he still has to give some sort of answer. Of course, he can reply that he does not remember. But even that answer could be shown to be incriminating. As each witness is called to testify and examined, by so-called “direct examination,” he or she may next be cross-examined by the counsel for the other side. Most of the evidence in a typical trial comes to the attention of the trier (the judge or jury) through this process of examination of witnesses. From the argumentation in the sequences of questions and replies in the examination, the jury (trier) draws conclusions about the matters discussed on the basis of what they have seen and heard.

Because of the fear of backfire (see note 3), the conventional method of cross-examination is to break the sequence of dialogue down into a series of leading questions.

In a personal injury case (Lubet, 1997, p. 117) the plaintiff stated during direct examination that her doctor told her she did not need to go to physical therapy any longer. The defense lawyer asked her if that was because her

recovery had been quicker than expected. She answered that it was because the therapy was too painful and she was not making any progress. The rule is to never ask a witness to explain anything, as this gives the witness an opening to say all kinds of things that go against your side of the case. The advice is to only use very specific leading questions so that the lawyer can control the cross examination without the likelihood of such danger occurring. Any sort of open-ended question might expose the cross-examination to this danger of backfire.

The technique of questioning is to break the dialogue down into a small series of specific questions, leaving the witness little choice but to answer 'yes' or 'no' to a specific question. Consider a hypothetical case (Lubet, 1997, p. 118) where a personal injury plaintiff went on a three-day camping trip and engaged in all kinds of strenuous activities of hiking, fishing, and tent pitching. Suppose the cross-examiner were to ask the open-ended question, "please tell us all of the things that you were able to do in your recent camping trip". The witness might then answer, "I was hardly able to do anything. Everything I tried caused me pain, even sleeping." The cross-examination strategy anticipating this kind of problematic reply is to break the series of questions down into a set of specifically worded leading questions. Here is an example of how such a sequence would run (paraphrased from Lubet, 1997, p. 118).

Question: You went on a three-day camping trip?

Answer: Yes.

Question: You went hiking?

Answer: Yes, but it caused me pain.

Question: You went fishing and swimming?

Answer: Yes.

Question: You pitched the tent?

Answer: Yes, but that hurt too.

Question: You stayed out in the woods for three days?

Answer: Yes (p. 119).

This strategy minimized damage from backfire by breaking the open question down into a series of smaller, more specific closed questions that the witness had to answer directly.

Examination is a dialogue. There are two primary participants, the questioner and the respondent. Of course, in a trial, other participants are also involved. The opposing counsel can make objections to the questions asked or the answers given. The judge must rule one way or the other on these objections, using procedural rules of the kind mentioned above. The judge has the duty to see that proper procedures are followed and that the trial moves along in a productive manner toward its outcome. There are various problems in this connection that are of special interest. One is the problem of relevance. Questions or answers may be excluded on the grounds that

they are irrelevant. The form of objection is, "I object on the ground that the question calls for an answer that is irrelevant" (Bocchino and Sonenshein, 1988, p. 29). Federal Rule of Evidence 401 defines relevant evidence as evidence having a tendency to make the claim at issue more probable or less probable than it was before. The problem then is to judge when a question is or is not relevant, according to this criterion. Another problem concerns the nature of the questions asked. As noted just above, leading questions are allowed, but if a leading question is thought to be excessive in the way it leads the respondent, the question may be objected to by the opposing counsel and struck down by the judge. Complex questions can also be objected to. If a question asks for two or more items of information at the same time, the following form of objection can be posed: "I object. The question is compound" (Bocchino and Sonenshein, 1988, p. 23). There is a tradition in logic of seeing tricky questions of the loaded and complex type as fallacious (Hamblin, 1970). Questions that are too loaded or tricky, such as the classical question so often cited in logic textbooks, "Have you stopped abusing your spouse?" are the kinds of questions that are especially worrisome. The problem with this kind of question is that it may not allow the respondent to fulfill the function of telling the truth of a matter as he sees it, by presenting the information that he supposedly possesses. It limits the options of the witness in a way that is troublesome and potentially obstructive to the purpose of providing information of the kind needed as evidence in a trial. This seems to imply that there is an information-seeking function of examination dialogue underlying the adversarial structure of the argumentation in a trial. The fact that the various restrictions in the rules of evidence try to curb questioning that is too argumentative suggests an underlying normative model of dialogue that posits the seeking of truth through the elicitation of information by witness testimony.

Wigmore is often quoted as having described adversarial cross-examination as the greatest legal engine ever invented for the discovery of truth. However, as Park (2003, p. 131) commented, empirical research has contributed little to either confirming or refuting the value of cross-examination. Another dimension to be taken into account in judging the value of cross-examination is that its success often depends on other factors. One thing especially that is very important to a successful cross-examination is prior collection of facts before trial begins. Park (p. 132) commented that a cross-examination may look spectacularly successful, but only because it depended on a pretrial investigation that uncovered a fact later used to impeach a witness during the trial. Park (p. 132) cited the example of the cross-examined witness who had to admit sending an e-mail urging a fellow witness to lie on the stand. Still, the caution with which lawyers so often approach cross-examination, and urge beginning lawyers to do so as well, suggests that how this part of a trial is managed can have a powerful effect on influencing the decision a jury will come up with at the closing stage.

4. Argumentative Nature of Witness Examination

Legal argumentation is an institutionalized form of communication in which parties play roles in organized events, such as a trial. There are procedural rules governing how the argumentation should be conducted. These rules are legally binding. Thus any attempt to analyze legal argumentation from a normative point of view by applying abstract models of dialogue to it has to be tempered to this institutional context. Also, there are different legal contexts to be considered. For example, argumentation in civil law will be governed by different standards than argumentation in criminal law. But even in a single instance, say argumentation in a criminal trial, the setting of the argumentation is complex. True, the basic format is a conflict of opinions between the prosecution and defense. But third parties are involved. Witnesses are questioned. The judge may present arguments to support her ruling. Procedural objections are made, and ruled on, one way or the other. A lot is going on, and it seems hard to imagine how any simple and abstract dialectical model involving only two participants could capture this apparently very complex process. Feteris (1999, p. 174) has shown how the differences of opinion in any legal process form a more complex network of argumentation than can be captured by a simple model of dialogue such as that of the critical discussion. For example, in the Dutch civil process, there is not only a difference of opinion between the parties, but also a difference of opinion between the plaintiff and the judge. And yet, Feteris has shown that despite these complications, the central argumentation taking place can be modeled as a critical discussion taking place between the two parties in the case.

For our purposes in this book, the central type of case to be considered is the criminal trial as treated in the Anglo-American legal system. As Feteris (1999) has shown, the central strand of the argumentation in such a case can be viewed as having the form of a critical discussion between the defense and the prosecution. The central aim is to resolve the conflict of opinions by means of rational argument, even though this aim also has to be seen as being carried out in a specific institutional framework. But what about the process of presentation and examination of witness testimony in such a trial? Is it just one part of the critical discussion, or does it involve a separate type of dialogue in its own right, joined to the critical discussion?

If you actually look at witness examination in real cases, the process looks to be highly argumentative. It looks as if the whole trial is suffused with the adversarial aims of both sides. The questions look less like requests for information than disguised arguments. An interesting aspect of examination of witnesses is how argumentative many of the questions actually are. Strategic aims are often revealed when the examiner's questions seem to guide or lead the witness too much one way or another. The proper form of objection in such a case is, "I object. The question is argumentative" (Bocchino and

Sonenshein, 1988, p. 17). Thus, despite the evident bias of the examiner, suggesting that her aims in the dialogue are more like persuasion than information-seeking, there does seem to be an underlying aim of information-seeking that the rules of evidence try to preserve, even within our adversarial system of law. Federal Rule of Evidence 611, stated just below, requires that the mode of interrogation of a witness should make it “effective for the ascertainment of the truth.” Even though an adversarial element will be present, somehow the system is based on the assumption that the truth, or the real factual information known to the witness, can arise as genuine evidence out of witness examination. For the process of examination to allow the needed information to come from the witness, there are procedural restrictions on the kinds of questions the examiner is allowed to ask. The concept of the leading question is central to understanding these restrictions. A leading question, according to McElhaney (1989, p. 104), is a question that “suggests the answer to the witness.” The criterion given in *United States v. Durham*, 319 F.2d 590, 592 (1963), quoted in Ogle et al. (1980, p. 43), is “whether it (the question) so suggests to the witness the specific tenor of the reply desired by counsel that such reply is likely to be given irrespective of an actual memory.” In other words, a leading question is one that suggests to the witness, before he answers the question, which answer is the preferred one.⁵ But note that this criterion expresses a normative standard by implying that what should be elicited by a question used in examination is the actual memory of the witness. This criterion implies that it is a problem if the asking of the question overrides the bringing out of information that the witness possesses, by suggesting an answer. The underlying assumption could be that the witness is in a position to know about something, and thereby possesses certain information, and the function of the question should be to bring out this information in court. This requirement is, however, tempered by the allowing of leading questions in some instances.

4.1. *Leading Questions*

Leading questions are permitted on cross-examination – that is, they are permitted after the one counsel has finished her direct examination of the witness, and the opposing counsel follows up with his examination. But leading questions are not generally allowed during the direct examination itself. Under Rule 611, the FRE give guidance on when leading questions can be used and when they cannot. Clause (c) reads as follows:

Leading questions should not be used on the direct examination of a witness except as may be necessary to develop the witness’ testimony. Ordinarily leading questions should be permitted on cross-examination. When a party calls a hostile witness, an adverse party, or a witness identified with an adverse party, interrogation may be by leading questions.

⁵ A question is leading when “its words or context suggest the answer to the witness”, such as “You were in the hallway when the first shot was fired, weren’t you?” (Park et al., 1998, p. 72).

This rule clearly leaves quite a bit of scope for interpretation of how to apply it in specific cases, as ruled by a judge. What is most visible in the rule is the distinction between the permissiveness of leading questions in the two different contexts of direct examination and cross-examination. And yet in both instances, there are exceptions to the rule. Because the rule is subject both to interpretation and to exceptions, it would be helpful to see what its rationale is. Clause (a) of Rule 611 gives the rationale of the rule. It reads as follows:

The court shall exercise reasonable control over the mode and order of interrogating witnesses and presenting evidence so as to (1) make the interrogation and presentation effective for the ascertainment of the truth, (2) avoid needless consumption of time, and (3) protect witnesses from harassment or undue embarrassment.

The first rationale seems to bear the most weight of the three. One might have thought that the purpose of the rule would be to prevent the questioner from misleading the trier, or to prevent the questioner from being in a position to manipulate the witness. Both these concerns are negative in nature. Clause (1) covers these concerns, but does so by putting the rationale in a positive way. The questioning is supposed to be “effective for the ascertainment of truth.” This way of putting it appears to be significant. It tells us that the purpose of examination is to ascertain the truth of a matter in question.

The general rule of excluding leading questions in direct examination is subject to several exceptions, however, listed by McElhaney (1989, pp. 104–5): leading questions are permitted (1) on preliminary matters that are not in dispute – for example, on background information collected during the examination of the witness, (2) in examining very young or very old witnesses, (3) in questioning witnesses who have memory lapses, (4) in questioning witnesses who have been shown to be hostile, and (5) in some courts, if the question is intended to clarify a point, or help the jury to understand something. Finally (p. 108), asking leading questions is an acceptable way of showing the qualifications of an expert witness. The reason, according to McElhaney (p. 108), is that if the expert has to recite his own qualifications, it makes her sound as if she is “blowing her own horn.” In general, leading questions are something to watch out for in legal examination of witnesses, because too much leading by the questioner might mean that the witness gives biased answers that do not accurately represent the facts she knows about. It seems that some kind of logical analysis might be helpful, because loaded questions and fallacies of question-asking have been studied by logicians. The difficulty with leading questions is that because they are defined in terms of “suggesting” an answer to a question, it would seem to be difficult or even impossible to bring any kind of objective logical analysis to bear on them. But the advantage of the dialectical approach presented in this book is that it includes Grice’s theory of conversational implicature (Grice, 1975), which is capable of giving an analysis of how

questions asked in a conversational exchange can suggest a preferred reply to a respondent.

In legal argumentation of the kind used in a trial, much of the evidence used by the court is based on the form of argument called appeal to expert opinion, as indicated in Chapter 1. While such arguments can certainly be abused, or used fallaciously, they are in many cases reasonable arguments, even though they should be seen as fallible, and as subject to critical questioning, as shown in Chapter 1. In what kind of goal-directed conversational framework, or type of dialogue, is this kind of argumentation used correctly? The answer proposed in Chapter 5 is that peirastic information-seeking dialogue is that normative framework. It will be shown in this book that the success of peirastic dialogue depends on two main factors. One is that the information presented be sufficiently complete. This factor, in a case of witness examination, means that the “story” told should be coherent and should give a full and adequate account of the facts of a case. The other factor is the testing out of the information. The story should be critically probed in depth, bringing out any implausible aspects of it, and subjecting them to questioning. This aspect can be used to explain how appeal to witness testimony should properly be evaluated by a process of examination dialogue that is basically information-seeking, even though the whole process is heavily overlaid with argumentative questions that give it an adversarial aspect characteristic of the persuasion dialogue.

5. Questioning an Expert Witness

It has become common knowledge that “junk science” has caused many problems for the courts (Huber, 1991). In “toxic tort” cases, experts are called in to testify that ingesting or using some product was arguably the cause of a harm, and this expert opinion evidence is then used to argue that the manufacturer should be held liable. Causality can be hard to prove or disprove, however, and such cases are often locked in controversies that are hard to resolve. Another example is the “battle of the experts” that typically takes place in cases of the insanity defense, where psychiatric experts for the defense claim the defendant was “insane” at the time of the crime, while psychiatric experts for the prosecution make the opposite claim. Understandably, making sense of this kind of expert opinion evidence can be a huge problem for judges and juries and a source of much confusion in a trial.

Expert testimony has become an increasingly important kind of evidence used in the courts. According to the Frye test (*Frye v. United States* 293 F.1013 D. D. Cir. 1923), expert testimony is admissible only if it is based on general acceptance in a scientific field. This test is conservative, because it can rule out new scientific techniques that have not yet gained general acceptance. In another landmark case, scientific evidence that an antinausea

medication called Benedictin causes birth defects was rejected by a district court (*Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 951 F.2d 1128 9th Cir. 1991). But when the case reached the Supreme Court, a more inclusive approach was adopted that allows admissibility of an expert opinion as evidence even if it is not generally accepted in a field of science. Daubert, reflected in Rule 702 of the FRE, only requires that the expert's testimony should rest on a reliable foundation and be relevant to the task at hand. Among the factors cited to test for reliability, Daubert added the following: whether the expert's theory has been tested, what its rate of error is, and whether it has been subjected to peer review. While Frye made the court a more passive partner in accepting expert testimony or not, Daubert seemed to make the court have to play a highly active role in questioning the basis of the expert opinion. The Daubert criteria have proved problematic to work with, and subsequent rulings have made further modifications, but the whole area of expert testimony evidence remains in an unsatisfactory state. Daubert put a heavy burden on the judge, who must be prepared to critique scientific evidence (Moreno, 2001, p. 1044). In *Kumho Tire v. Carmichael*, involving a highway accident due to a tire that failed, an engineer with practical experience in tire testing testified that the accident was caused by tire failure. The court found that his testimony did not meet any of the four Daubert admissibility criteria. On appeal, the Eleventh Circuit held that Daubert applied only to scientific expert testimony, not to testimony based on personal observations or experience (Moreno, 2001, p. 1051). The Supreme Court reversed this decision, holding that Daubert does apply to expert opinions of a practical sort based on personal experience and observations.

Judges, lawyers, and juries are normally not experts in the scientific fields in which testimony is now so often offered as evidence in courts.⁶ Thus it has proved to be difficult to say just how far they should be expected to go in attempting to assess such evidence. What could be very helpful here is the argumentation scheme for appeal to expert opinion in Chapter 1. It shows what the premises and conclusions in an appeal to expert opinion are, and thus gives a basis for laying down requirements on what form such an argument should take. It also presents the critical questions that need to be asked in order to assess the probative weight of the argument. But as the development of expert systems in AI has shown, the actual dialogue between the expert and questioner is more complicated than just a routine sequence of asking and answering a few specific critical questions. The questioner has

⁶ Although they may not be experts, in a case of any significance, lawyers will have retained consulting experts to assist in preparing questions that should be asked of the experts testifying in a trial. The expert may also instruct the lawyer in the underlying principles, so that she has the basic knowledge needed to respond to questions of relevance and other objections that might be raised during the trial.

to not only elicit but also examine the reasons the expert gives for holding a view. The expert systems technology that has been developed in AI has begun to deal with many of these subtleties. In such systems, the user asks the expert system a question, and the system gives an answer. It seems on the surface that the dialogue is simply a form of information-seeking. In practice, however, a user often has problems in trying to make sense of what the expert has said. The user, in such cases, has to examine what the expert said to get some sort of coherent account of it that he can understand. But part of this process may involve probing into what the expert said critically and trying to grasp the rationale behind it. What happens in this case is that there is a shift from pure information-seeking dialogue to a more probing and critical type of dialogue that questions the reasons behind an opinion offered by the expert. In expert systems, this type of dialogue is called critiquing. Software critiquing systems are now part of the technology used in expert systems to expedite the transfer of expert knowledge (Silverman, 1992). In the typology of dialogue systems of Chapter 2, this critiquing type of question–reply exchange appears to fall under the critical discussion or persuasion type of dialogue.

The examination of an expert witness in a trial can also be characterized as information-seeking dialogue, even though it is different in important respects from the examination of a nonexpert witness. The expert is permitted to state an opinion as a factual proposition, because she has credentials and expertise that jurors do not. Thus the expert witness can draw an inference that supports the conclusion of the one side or the other in the trial. But the examination of an expert witness also has a peirastic aspect, for two reasons. One is that the examiner or cross-examiner is permitted to elicit and even compel the assertion of propositions that are or should be a part of the expert's commitment to explaining. Such further commitments, once elicited, may even be used to undermine the basis for the expert's opinion. The other is that the cross-examiner is ordinarily permitted to challenge inferences necessary to the expert's opinion, or to challenge derived propositions on which these inferences were based. The original examiner is also entitled to ask questions designed to rehabilitate a witness. Thus the information-seeking dialogue characteristic of expert witness examination is embedded into an overarching persuasion dialogue that can play a prominent part in how the sequence of questioning is directed. It is peirastic.

5.1. *Expert Consultation Dialogue*

The expert opinion consultation type of dialogue can be classified as a special subtype of information-seeking dialogue. In this subtype, the respondent is an expert in some skill or domain of knowledge and the questioner is someone who is not an expert in that field, but needs to obtain advice or information about it. One complication is that explanation often takes place in such dialogues, as well as argumentation. But expert opinion consultation

dialogues can be highly argumentative, and in many cases, should be. The layperson questioner should not always take what the expert says at face value, and if she wants to draw the most informed conclusions from what the expert says, she must often probe deeply into the reasons the expert gives to support his opinions. Experts are often wrong. Sometimes they do not state their opinions very clearly or intelligibly. As often happens in court, experts will even contradict each other directly on a question. For all these reasons, a critical attitude on the part of a questioner will help very much in drawing the best conclusions in an expert consultation dialogue.

Resolution of inconsistent commitments is very important in an expert consultation dialogue. If an expert even appears to have committed herself to an inconsistent set of propositions, the apparent inconsistency needs to be dealt with. Attacking such an apparent inconsistency is the basis of many an impeachment in legal cross-examination of experts. If the expert cannot resolve the apparent inconsistency, or does not deal with the questioning of it very well, her credibility is likely to be damaged. Such an attack on the credibility of an expert is a legitimate weapon in the arsenal of the legal cross-examiner and can be an extremely powerful one in some cases.

But because critical questioning and probing can be so important in many cases of expert solicitation dialogue, it is evident that this kind of dialogue exchange is not purely of the information-seeking type. When an opinion or argument of an expert needs to be critically probed or even attacked, the dialogue seems more like a critical discussion than a purely information-seeking type of dialogue. The skill of the questioner in peirastic dialogue is to judge what kind of question is best to ask at a given move in the sequence of a dialogue. A question asked prematurely, for example, can be a disaster. What is important is knowing when to ask the right question at the right place in relation to the questions and answers that preceded this point, and in relation to the sequence of questions and replies that will follow. The method for evaluating argumentation in such sequences of questions and replies is the profile of dialogue, as outlined in Chapter 2. It is an abstract model of a locally connected sequence of moves in a dialogue that can be used to represent the argumentation in a small part of a peirastic dialogue. The profile of dialogue yields an outline of the immediate context of use of a question in a longer sequence of dialogue moves.

5.2. Embedding of Information in Persuasion

Ideally, the examination of a witness in court should be an information-seeking dialogue of the kind that enhances the quality of the persuasion dialogue in the trial by making that persuasion dialogue proceed on a better informed basis. The problem is that this information-seeking dialogue can shift to a persuasion dialogue in subtle ways. What happens is that it appears there is an information-seeking dialogue within the envelope of a persuasion dialogue. But in reality, there is one persuasion dialogue nested

within another. A case of two dialogues, adapted from the longer versions given in Bank and Poythress (1982, p. 183), will illustrate the problem.

Informative Dialogue

Attorney: Did you evaluate Mr. Doe, at the request of this court, regarding the issue of his competence to stand trial?

Physician: Yes.

Attorney: What clinical observations did you make of Mr. Doe that might be relevant to the determination of his competency to stand trial?

Physician: Among other things, Mr. Doe endorsed the belief that his parents are part of a larger conspiracy to steal royalties that he believes he is due to receive for the invention of an automobile that is powered by water. He further voiced the belief that his attorney had been hired by his parents to help put him away in an institution so they could receive his royalties.

Persuasive Dialogue

Attorney: Doctor, did you perform a psychological evaluation of Mr. Doe at the request of this court?

Physician: Yes.

Attorney: Did you observe any strange or abnormal behavior in the course of your evaluation?

Physician: Yes. From the first minute of the interview this pathetic, unfortunate young man voiced bizarre and delusional ideas of a paranoid nature, including the irrational notion that his parents are plotting against him.

Comparing these two dialogues, characteristics of the information-seeking type of dialogue are evident in the first one, as contrasted to various features of the second one that are characteristic of persuasion dialogue. In the informative dialogue the attorney asks for clinical observations and the physician reports what he heard Doe say. In the persuasive dialogue, the question asks for any “strange” or “abnormal” behavior that was observed. Because of the persuasive function of the language of these terms, the answer to the question is already led in one direction with respect to what is at issue in the case. In answer to the question, instead of giving specific items of information that were observed, the reply is general, and uses persuasive language such as the terms “unfortunate”, “bizarre”, and “irrational”. Language has an informative and a persuasive function, and how we are to judge the use of language in a case should depend on the context of dialogue in the case. Persuasive language that is appropriate in a persuasion dialogue can be problematic in an information-seeking dialogue, where the purpose of the dialogue is not that of persuasion.

It is necessary to pay close attention to the dialogue structure of the argumentation in a trial to be aware of these subtleties. An argument that

is quite reasonable when used in one context of dialogue may be quite fallacious when used in a different context, for a different purpose. While it may be quite true that, in general, the argumentation in a trial should be viewed as being part of a persuasion dialogue, dialectical shifts can, and often do, occur during the sequence of argumentation. When a witness is examined, there is a shift to an information-seeking type of dialogue. If in this subinterval, where information-seeking is appropriate and is what is required, there is a shift to persuasion dialogue, the outcome can be quite obstructive to the argumentation in the trial as a whole. The jury is poorly informed, and the power of making the ultimate decision in the case is transferred (inappropriately) from their hands to the hands of the expert witness. The problem is that the jury, not the expert witness, is supposed to make the ultimate decision of whether the accused is guilty or not. The dialectical shift has obstructed the progress of the argumentation in the trial toward its ultimate goal, rather than helping it toward that goal.

In some cases, such as the one above, it is clear that an illicit dialectical shift has occurred that is highly significant from the point of view of evaluating the argumentation in the case. But in other cases, for example, in cases of cross-examination of a witness, because this type of dialogue involves a mixture of information-seeking and persuasion dialogue, it may not be such a straightforward matter to determine exactly where a shift occurred, and to judge whether it is illicit or not. But there is no question that examination of an expert witness is often a subtle kind of exchange to figure out, to determine just when the persuasive function has improperly overridden the information function. Thus it would appear that the developments in the courts, through *Daubert* and *Kumho Tire*, are entering a difficult area where it is a problem to know how far judges, lawyers, and juries need to go in critically examining expert opinion testimony. It is an even bigger problem to come to know what kinds of methods they should use. The entry point for solving the problem is the argumentation scheme for appeal to expert opinion and the accompanying set of critical questions set out in Chapter 1. But clearly we cannot stop there. There can be subquestions under each critical question, and each case of examining an expert opinion needs to be formulated in a profile of dialogue. Even more importantly, as shown above, account needs to be taken of the purpose of examining an expert in a trial. It is to get information, of course, and the information is relevant in the critical discussion that is the main type of dialogue attempting to resolve the conflict of opinions in the trial. The related problem is to define relevance in such a setting.

6. The Problem of Analyzing Relevance

The typical kind of case in which relevance is a legal problem occurs at some point in a trial in which one of the attorneys asks a question or puts forward

an argument and the opposing attorney objects by saying “That’s not relevant.” The judge then has to make a decision as to whether the question or argument is relevant or not. Also, everyone is familiar with the kind of case in which the judge rules that the question or argument is not relevant, and the attorney replies that if the judge can give her some latitude for argument, it will become apparent later exactly why this question or argument is relevant. Already from this kind of situation, it is evident that relevance may be hard to predict or judge at any given point in a trial, especially in the early stages, where the arguments and issues that will be posed by both sides are not yet evident. Which way will the line of argumentation go? That may not be evident yet, and so it would seem to be hard or even impossible to anticipate what might turn out to be relevant. In retrospect, relevance may be much easier to evaluate. Yet in legal argumentation, the most pressing questions of relevance are likely to arise at some earlier point, where the development of the lines of argumentation on both sides is still in progress.

6.1. *Relevance and the Trial Rules*

When Kenneth Starr’s report was presented to Congress on September 11, 1998, some criticized it for containing so many explicit details of the sexual relations between President Bill Clinton and White House intern Monica Lewinsky. But a lawyer interviewed by a major network the next day said that these details had become relevant, because Clinton had explicitly denied having “sexual relations” with Lewinsky. What did the lawyer mean by saying that these details in the Starr report were “relevant”? Apparently what he meant was that Starr had to report the facts, the evidence needed to disprove Clinton’s claim. By this means, Starr could do his legitimate job of showing that Clinton had lied in court, had obstructed justice, and committed other crimes. In general, what is meant by the term ‘relevant’, when someone asserts or denies, as in this case, that certain assertions or alleged facts are relevant or irrelevant? The notion of relevance is fundamental in dealing with evidence in a case at trial, and it is defined in the rules of evidence used by the judge to admit or bar arguments introduced by a lawyer and to ensure that fair procedure is followed by both sides.

To try a case effectively, a lawyer needs to have a routine familiarity with the rules of evidence, not only so that she can find and produce evidence in court, but also so that she can deal with objections that a rule has been violated. This requires knowing the laws that apply in a jurisdiction, but also knowing the style and preferences of the presiding judge who applies these laws in a court. As Park et al. (1998, p. 11) describe the situation, “Evidence at trial comes as fast as every question and answer.” Thus having a theoretical grasp of evidence is one thing. Being able to apply it in a trial is a more practical matter of skill and experience. Even so, rules of evidence are based on underlying logical assumptions about evidence and rational argumentation, and on general assumptions about how such evidence can

be used to give reasons to support or criticize claims made and arguments put forth in a trial. These assumptions can be stated and discussed critically. Many of them are stated quite explicitly in the FRE, which offers a clearly expressed set of guidelines for codifying the rules of evidence in American courts. Enacted in 1975, the FRE reduces the guidelines to around sixty relatively short rules. Although they are law only in the federal system, most state courtrooms, have rules of evidence very similar to the FRE (Park et al., 1998, p. 10). Thus the FRE is vital for understanding the procedural rules of a trial.

Relevance is a central concept in the FRE. Something is said to be relevant in a trial according to Federal Rule of Evidence 401 if it has so-called probative value in relation to the 'action' or issue to be decided by the trial. To be relevant in this sense, something must be useful in contributing to a chain of argumentation that has as its ultimate conclusion the claim at issue. So, for example, if the claim at issue is that the defendant is guilty as charged, something will be relevant if it can be used to prove or disprove this claim.⁷ Very often it is an argument of some sort that is relevant or not. But questions, replies to questions, assertions, and other kinds of speech acts, as well as arguments, can be said to be relevant or irrelevant. In a trial, the concept of relevance performs a gatekeeping function. It bars arguments and other lengthy considerations that might take up court time and costs. It also bars arguments or remarks of one sort or another that might tend to prejudice the jury and might be of little or no probative value. Relevance is often confused with admissibility, and is a narrower concept.

The relevance of an argument is defined in the Federal Rules of Evidence (FRE) as an argument's having probative value with respect to the issue or 'action' in a case. But what is probative value, and how can it be judged? And more generally, how are we to judge, in a given case, whether something is relevant, in the sense of having probative value, or not? Are there precise criteria that can be given such that, in any given case we can apply the criteria and come up with an objective or verifiable evaluation of whether something is relevant in that case or not? The difficulty in the past is that relevance has always seemed too contextual, too dependent on the kind of experience and skill we expect a judge to have in ruling on a case, for us to come up with objective criteria based on logic. Consider a case of appeal to witness testimony in a trial. Should it be judged to be relevant if the examiner attacks the character of the witness, calling him a liar, and citing his previous convictions for perjury? This is a legal decision that needs to be made by a judge in a specific case, depending on the rules applicable in that

⁷ It needs to be recalled that relevance is not solely a matter of probative value. A judge can exclude relevant evidence under Rule 403 if the inferential chain is long or weak enough so that it would likely be misleading or confuse the jury by creating a prejudicial effect that substantially outweighs its legitimate probative value.

jurisdiction, and on many other matters. But what is the logical basis of such a decision? To address this question, one has to first look at the argumentation scheme for the appeal to witness testimony as a type of argument. That form of argument and its accompanying set of critical questions will be the basis for determining what is relevant or not. But beyond that step, the context of the argumentation in the broader framework of the particular trial needs to be taken into account. Where is the examiner going with this line of argument? Does it bear on the action to be decided in the trial? These are the additional questions that will need to be considered by the judge. The problem was in the past that there was no normative framework of argument use in which such a problem could be meaningfully expressed, much less solved.

A certain amount of adversarial argumentation is tolerable, and can even be a good thing in a trial. But too much information could slow down the trial, or even confuse a jury. Also, to be relevant, evidence must really bear on the issue to be decided. For this purpose it needs to be a kind of information that the witness has personal knowledge about, as noted above. Relevance partly refers to information-seeking. The Federal Rule of Evidence that defines relevant evidence has a relatively permissive definition of ‘relevant evidence’. As noted above, it allows anything as relevant that tends to make the ultimate claim at issue in a trial more probable or less probable than it would be without the evidence (Rule 401). The ultimate claim (or so-called “action”) at issue refers to the proposition that the attorney for the one side or the other is supposed to prove. For example, in a criminal trial, the prosecution has the job (burden) of proving beyond a reasonable doubt that the defendant committed the crime as charged. The defense has the job of showing that the prosecution’s attempted proof is open to reasonable doubt. Thus Federal Rule 401, the current federal rule for relevance, is a fairly liberal way of defining relevance. It allows anything to be relevant even if it only tends to make the claim at issue very slightly more or less probable. One kind of evidence that would be relevant, then, is the kind that comes from the personal knowledge of a witness who is in a position to know about the facts of a case. Such information can be relevant provided that certain assumptions are made about the reliability of the witness, and so forth, as indicated in Chapter 1.

In addition to Rule 104(a), the main rule defining relevance in the FRE, there is an additional clause, Rule 104(b), that serves to specify more exactly how relevance is to be judged in a case:

When the relevancy of evidence depends upon the condition of a fulfillment of fact, the court shall admit it upon, or subject to, the introduction of evidence sufficient to support a finding of the fulfillment of the condition.

This rule expresses the notion called conditional relevance. In a case in point, *MDU Resources Group v. W. R. Grace and Company*, 14 F.3d 1274 (8th Cir.), cert. denied, 513 U.S. 824 (1994), was concerned with asbestos

material made by Grace, a manufacturer, and installed in MDU's building. MDU offered as evidence in the trial a letter that could have given Grace notice of the risk of the installation of asbestos in their building. The trial court held the letter irrelevant because MDU had failed to prove the date of its receipt by Grace. But the appeals court argued that the letter was conditionally relevant.⁸ Without going further into the details of the case, one can already see how this kind of case poses a problem that is not easy to resolve in the absence of some general theory of relevance. It can also be seen how the peirastic approach can provide the basis for a theory that is applicable to this kind of case. The missing information is the statement that the letter was received by Grace. This statement needs to be shown to be reliable information, and once this has been done, it fits into the chain of argumentation used in the main persuasion dialogue in the trial to evidentially support the ultimate *probandum*. Thus the issue of conditional relevance reduces to the embedding of the information-seeking dialogue into the critical discussion dialogue in the trial.

6.2. Peirastic Relevance

A main problem in getting some kind of grasp of how relevance or irrelevance is determined by Rule 401, or even any rule like this one, is to make sense of what is called 'probability' in the statement of the rule. This term may be taken by many to refer to probability in the statistical sense, as measured by the probability calculus, and other mathematical techniques of statistical science. However, such an interpretation would be dubious, for several reasons. One is that in judging the relevance of questions or answers in an examination dialogue in a trial, rarely are the mathematical methods of statistics used. And in typical cases, if such methods were used, they would seem to be inappropriate, and would probably obfuscate the problem of relevance or irrelevance more than solve it.⁹ Also, legal writers on evidence such as Wigmore define the term 'probative value' to refer to what is called 'probability' in the law of evidence, strongly suggesting that what they have in mind is not the same thing as statistical probability. What has probative value, in this much broader and more practical sense, is anything that can be used as a legitimate and appropriate argument to prove or disprove some conclusion or conjecture that is at issue. As shown in Walton (2002), since the Enlightenment period, we tend to associate probative value with probability in the statistical sense, but there is an older meaning of the term, coming from the Greek philosophers, that is better translated as 'plausibility'. This term refers to reasonable acceptance of a proposition on

⁸ The above brief outline of the Grace case has been taken from the fuller description and analysis of the case by Callen (2003).

⁹ The relevancy rules "recognize that relevancy determinations require extensive substantial knowledge of the entire case to be made intelligently and thus cannot be reduced to algorithms like Bayes' theorem" (Allen and Leiter, 2001, p. 1520).

the basis that it is supported by arguments that have premises that seem to be true, to some greater or lesser degree. To the modern mind, imbued with the spirit of positivism, this ancient notion of plausible reasoning may not seem familiar or even comprehensible.¹⁰ But it was the main thesis of Walton (2002) that it is this ancient meaning that is at the root of the definition of relevance in the Anglo-American law of evidence, and in Rule 401 in particular.

The problem is, however, that resting conclusions on plausible assumptions about what seems to be the case relative to the given information in a case has been widely distrusted in Western thinking in the past. Especially since the Enlightenment, resting logical reasoning on plausibility has been associated with casuistry and even moral laxism. Seeing logical reasoning as fallible comes very hard in a positivistic culture in which precision and finality must take the form of absolute decisions in which clear and decisive evidence is not to be questioned, once established. Admitting fallibility may seem to open the floodgates to endless negotiations about whether a conclusion has been proved or not. Especially in a culture of bureaucracy, flexibility in the rules can seem to lead to an overwhelming and costly flood of disputed cases. The problem then is how a legal system can be based on plausible reasoning of a kind that, while being fallible and contextually tuned to the information and reality of a given case, still has clear and firm rules. The problem is of such wide generality that it would be naive to expect any pat solution to it in one shot. Still, if a structure for analyzing and evaluating appeal to witness testimony and examination as a form of evidence can be given, it would take us a long way. By learning the ways this form of argumentation can go wrong, we will be in a much better position to judge when it is right.

Narrowing this general problem down to present concerns, the question is posed: when is something relevant in conducting an examination or cross-examination of a witness in a trial? For example, what sorts of questions are relevant to put to the witness? When a question is asked by counsel, what sort of reply by the witness is relevant or irrelevant, in relation to the question? And finally, what sorts of arguments are relevant? For example, when is a personal attack (*ad hominem*) argument relevant or irrelevant? These are the kinds of questions we want to have answers to. And the peirastic theory of examination dialogue should be able to throw light on these questions if it is a useful theory that is applicable to legal examination and cross-examination of witnesses in a trial.

¹⁰ The leading exception to this thesis about the spirit of positivism is the field of law. Lawyers are very familiar with the notion of plausible reasoning, and especially the rationalist tradition in the law of evidence has recognized that rational argument cannot always be reduced to deductive or inductive models of reasoning. In addition, by accepting and applying the notion of relevance as part of the trial process, law as a field has been an exception to the general dominance of the positivistic view of reasoning.

What the peirastic theory says is that examination of a witness in a trial basically has an information-seeking function. But it is not just any information that is sought. What is needed is information of the sort that can provide premises in plausible arguments that are useful in rationally persuading the trier one way or the other on the ultimate issue to be decided in the case. On the peirastic theory, the relevance of a move in an examination dialogue needs to be evaluated against the backdrop of one type of dialogue nested within another type of dialogue. The inner dialogue is the peirastic dialogue found in the examination itself. The outer dialogue is the persuasion dialogue found in the competing arguments of the two advocates as evaluated by the trier. A move in an examination of a witness in a trial is relevant only if it elicits information in the inner dialogue that contributes to the fulfillment of the goal of the outer dialogue.

In a way, the problem of relevance is the opposite of the problem of leading questions. The problem with a leading question is that it is too argumentative. It leads too directly toward proving or disproving the ultimate claim at issue. The problem with irrelevant moves in an examination – like irrelevant questions or irrelevant replies – is that they are not argumentative enough. They do not lead directly enough toward proving or disproving the ultimate claim at issue. But like the problem of deciding whether a question is leading, the problem of deciding whether a move in an examination is relevant requires judgment, and may rest on presumption. Typically, for example, counsel may object that the opposed counsel's question to the witness is irrelevant, but the opposed counsel may reply, "If your honor can give me a little leeway, I can show where this question is leading." To judge relevance in a specific case, you take the chain of argumentation from where it is now, at some stage of the trial process, and extrapolate it forward to see if it leads toward the ultimate claim to be proved. If so, it is relevant. If not, it is not relevant. But it may be hard to see where the chain of argumentation is leading, in a specific case, because many details of the case may not yet have emerged in the trial.

The peirastic theory provides an extremely useful normative structure in helping us to understand the kind of reasoning used and the kind of evidence needed to support or rebut objections that a move in argumentation is relevant or irrelevant. According to this theory, a move made by either party in an examination dialogue in a trial should be evaluated as relevant or irrelevant on the basis of several evidential factors: (1) the type of move – question, answer, argument, explanation, narrative, or whatever, (2) the place of the move in the sequence of questions and replies in the examination dialogue, (3) the stage the trial is in, and the information that has been elicited at that point, (4) the ultimate issue of the trial – the proposition or claim that is to be proved or disproved, and (5) a projected estimate of the chaining forward of the argumentation from the point where the trial is now toward the ultimate conclusion to be proved. All five factors

are important parts of the evidence needed to evaluate relevance in a given case.

Another aspect of relevance that needs to be considered on the new peirastic theory is the relevance of arguments such as personal attacks. On the peirastic theory, examination dialogue includes not just the collection of information but also the evaluation of whether what has been collected is genuine information or not. Consequently, probing and testing arguments that may seem more like persuasion than pure information-seeking can sometimes be relevant. For example, suppose the character of a witness is attacked by the examiner. Is such an *ad hominem* attack relevant or not? According to the peirastic theory, to evaluate a specific case, each of the five factors cited above should be taken into account, on the basis of the information known in the case. Suppose the cross-examiner is trying to test out the credibility of the witness by questioning his character for veracity. Such a move could be relevant, at the right point in a specific case, because the credibility of the witness could be an extremely important item of evidence that could play a large role in helping the trier to make up its mind on how to rationally decide the outcome of the case. Suppose that in a different case the cross-examiner is simply trying to make the defendant look guilty by attacking the defendant in cross-examination as a person who has a morally bad character because he served a prison term in the past. This kind of *ad hominem* attack might not be relevant if it really makes no contribution as evidence that is useful in proving whether the defendant is guilty of the specific crime alleged or not.

Rulings on such matters in any legal system are determined by the rules of evidence being used. The basic American rule is Rule 401 of the FRE, which defines relevance in terms of probative weight of an argument with respect to the ultimate claim in a case. But even if an argument is relevant according to Rule 401, it can still be excluded from consideration on other grounds. According to Rule 403, relevant evidence may be excluded “if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence” (FRE, 1997). Despite these rules, a clever attorney can exploit the slight relevance of an argument to camouflage her purpose of using prejudicial arguments designed to ridicule a witness. The following dialogue from Crump (1997, p. 38), in which an FBI agent is examined by an attorney, shows how this kind of sophistical tactic works.

Q: Special Agent Jones, you are what is called a “special agent”.

A: Yes, sir.

Q: Well, how many of you fellows in the FBI are called “agents”, instead of “special agents”?

A: I don’t understand the question.

- Q: Well, what I mean is, how many agents are called just plain old “agent” instead of having a gussied-up label like “special” agent?
- A: Counsel, I think you have misunderstood. When a person completes the training and takes his or her oath and gets a badge, the title that the person gets, is the title of special agent.
- Q: (In astonishment) Really?
- A: Yes, sir.
- Q: You mean to say that everybody is a special agent, even the ordinary rank and file guy, whether they’ve been in one year or twenty, and even if there’s nothing particularly “special” about them?
- A: Yes, Sir. That’s what I’m saying.
- Q: In other words, it’s like an army where everyone has a title like a General, even though some of them in fact are privates?
- A: No. It’s just that the title you get is . . . special agent.
- Q: Which is totally bogus and phony and designed to mislead, isn’t it?
- A: I don’t think so.
- Q: Well, a person who’s not a member of the FBI might be fooled into thinking that a “special” agent was really something special, mightn’t they?
- A: I guess you could say that, if you look at it that way.

This examination is relevant, because it shows that the term ‘special agent’ is a title that applies to all FBI agents. But what the attorney is really doing, beneath this surface clarification, is to ridicule the agent and his credibility by making the whole agency look pompous. So the argumentation is definitely prejudicial. It attacks the credibility of this agent, by attacking the credibility of the FBI generally. But because the examination is, or appears on the surface to be relevant, it would not be likely to be excluded. And it is difficult to see how it could be excluded, because the argumentation is, at least on the surface, relevant.

The biggest perceived problem with the rules of evidence in use in American courts is that they so often exclude arguments and facts that are dialectically relevant in a case. Thus even though the trier may choose the best explanation, and do all the plausible reasoning in a case in an impeccably logical way, they may still arrive at a conclusion on the basis of less than the whole body of relevant information in the case. But on the other hand, the exclusionary rules do not rule out appeals to prejudice, *ad hominem* attacks, and other arguments that are not materially relevant, from a dialectical point of view. That legal rules of evidence should introduce some artificial rules of evidence that deviate from dialectical relevance can be understood. But when the legal rules adopt more and more exclusionary rules, or other artificial rules that depart from the normal requirements of dialectical relevance, the system of legal argumentation becomes more and more unnatural and leads to conclusions in many cases that many observers consider peculiar.

Whatever system of rules is adopted in any given jurisdiction or in any justice system, relevance is rightly considered to be the central procedural notion and should be at the core of evidence law. Given that the notion of relevance has been so difficult to define in the past, because of the lack of a precise underlying structure to explain it well enough, the temptation to pack in all kinds of restrictions under this all-inclusive category has proved to be hard to resist. According to Friedman (2003), the Daubert standard is too rigorous because it deals with sufficiency determinations by addressing them at the admissibility stage. The temptation to try to deal with everything under the category of relevance has been hard to resist, even on matters of expert opinion testimony.

The problem of relevance is the single largest logical problem in the law of evidence, and this is not the place to entirely solve it. What has been shown, however, is that the peirastic theory of witness examination provides an extremely useful framework for evaluating claims of relevance and irrelevance of moves in witness examination dialogue. The peirastic theory provides an overall perspective in which specific legal cases in which relevance is a problem can be studied and analyzed, and the various kinds of evidence for and against relevance can be put into a total evidential assessment of a case in a coherent and useful way. The peirastic theory certainly supports the view that some restrictions on relevance in a trial are reasonable enough. But it also supports Friedman's view (2003) that the reasons behind the exclusions need to be rethought.

7. The Fair Trial as a Normative Model

As noted in Section 2.2 above, the trial lawyer sees the examination process from an adversarial and tactical point of view. What is relevant from that viewpoint is to ask questions that contribute to winning the trial. But looking at relevance only from that viewpoint would be a distortion of the whole Anglo-American institution of the fair trial. The trier, as argued above, needs to adopt a more global viewpoint. The trier needs to think about the examination process and see it as a peirastic dialogue in which the weak points in the witness's testimony are probed and critically examined. It is this embedding of the examination process within the critical discussion of the trial that should be used as the normative framework of argument used to judge what is relevant or not.

The concept of the fair trial is a normative abstraction, representing an ideal of argumentation. But it is exactly this sort of ideal or abstract framework of what represents a good argument that is needed as a tool for evaluating relevance in actual cases. In a fair trial, there is a conflict of opinions about some issue. The issue is partly a question of fact and partly a question of law. The issue is about whether something is a fact, and if so, what its legal status is – for example, whether it is a contravention of the law.

If the issue cannot be resolved by some easier or less costly means, then it may go to trial. The purpose of the trial is to resolve the issue. The burden of proof is set by the type of case, and then each side has an advocate who has the job of putting forward the strongest arguments that can be marshaled to meet the required burden of proof. The Anglo-American common law is adversarial. Each side is supposed to put up the strongest argumentation it can, both to prove its own claim and to critically question or to refute the claim of the other side. The two sides are opposed, meaning that one side wins the case if and only if the other side loses the case. The outcome can be decided by default. For example, in a criminal case, if the prosecution fails to prove guilt beyond a reasonable doubt, then by default the defense wins. A successful trial will always resolve the issue in this way. If, for some reason, the conflict of opinions cannot be resolved – for example, if the jury is deadlocked – it is declared a ‘mistrial’, and the case may have to be tried once again.

7.1. The Adversarial and Inquisitorial Systems Compared

According to Van Koppen and Penrod (2003a, p. 2), the most fundamental difference between systems of law in European countries can be roughly characterized by contrasting the inquisitorial and adversarial systems. Many countries, however, have elements of both systems. Also, the two systems are now converging and becoming more similar, especially as the inquisitorial system is increasingly adopting features of the adversarial one. However, the systems have different roots, and the basic dialectical framework of each is essentially different. Each represents a different model of argumentation. In the adversarial model, the trial is supposed to be a fair contest between roughly equal opponents (p. 2). In the inquisitorial system, the trial is considered “an official and thorough inquiry” (p. 3). In the inquisitorial model, the technicalities of fair play are put aside if at any point during the trial they threaten to get in the way of finding the truth (p. 3). Inquisitorial trials have a strong preference for documentary presentation of evidence, as opposed to oral presentation of evidence by witnesses. Adversarial systems rely on rules of evidence, whereas inquisitorial systems trust the judge to give weight to evidence in accord with its reliability.

The Netherlands is probably the most inquisitorial system of justice in Western Europe, whereas England and Wales are at the opposite end of the spectrum in being the most adversarial (Van Koppen and Penrod, 2003a, p. 4). However, the most opposite extremes of the adversarial–inquisitorial continuum are the United States and The Netherlands. Van Koppen and Penrod (2003b) represent these two extremes by using a pair of models designed to typify the central paradigm of each system. Dutch culture favors compromise over disagreement. This feature is reflected in the Judge Dee version of justice, named for a Chinese judge who lived in the T’ang dynasty and who has been featured as a character in recent mystery novels – “a

decision maker who achieves quite wise decisions by balancing facts and interests” (Van Koppen and Penrod, 2003b, p. 351). American culture features a strong emphasis on individual rights. Van Koppen and Penrod (2003b, p. 352) represent its style of justice as following John Wayne in the movie *The Alamo* when he said, “There’s right and there’s wrong. You gotta do one or the other.” This image evokes a contentious or adversarial model of justice.

The difference between the two systems may be a question of balance between two elements, both of which are needed as requirements of what will be called in this book the fair trial concept. The fair trial, it may be argued, can benefit from adversarial competition in which the advocates of each side bring forward arguments and critically question the arguments brought forward by the other side. But for this adversary argumentation to be useful to move toward the real truth of a matter, as much information as possible about what allegedly happened in the case needs to be brought in. For what is needed is not only to have strong and persuasive arguments, but also to have arguments based on the relevant information in the case. Logically sophisticated and well-structured arguments, even highly persuasive ones, may be not only useless, but even highly misleading, if they are based on incomplete information about the real case at issue. Thus the “fact-finding” aspect of the law is often rightly emphasized by legal theorists.

7.2. *Can a Trial Be Too Adversarial?*

A basic problem with the Anglo-American system of law is that its highly adversarial nature can overwhelm the whole purpose of a trial, which is to resolve the initial conflict of opinions based on all the evidence that is available in a case. Making the evidence available to the trier depend on information-seeking should be part of the definition of relevance, both in the collection of information before the trial, and in the questioning of witnesses during the trial. But the way the system is, both counsels are supposed to be advocates and to put up the best possible case to win a favorable outcome. This advocacy function often seems to license an attacking style in the examination, and especially in the cross-examination of witnesses. It often seems that the witness is being attacked, more than just questioned or examined. In many instances, the pressure to win is so strong that all kinds of tricky and dubious tactics are used to get a victory. Even so, the virtues of the adversary system are often extolled by those in the legal profession. The use of clever tactics by lawyers to get the best of the opposition, rather than being condemned, is seen as showing skill, and is even rewarded by enhanced reputation, financial reward, and promotion in the system.

Pizzi (1999) has criticized American criminal trials on the grounds that they are too adversarial, too unconcerned with finding the truth, and too bogged down in technicalities. He sees the O. J. Simpson case and other recent highly publicized trials as examples of these excesses (p. 119). He

praises foreign justice systems, especially those of European countries such as The Netherlands, Germany, and Norway, contrasting them with American trials. He feels that foreign systems pursue the truth more than the American trial does. Among the outcomes Pizzi cites are the excesses of American plea bargaining (p. 70) and the pervasive dishonesty in the system (pp. 38–40), including the problem of police perjury. He feels that the police should function more as neutral fact-finders who collect evidence both for and against the suspect, rather than being so close to the prosecution side (pp. 114–15). Many readers will sympathize with these criticisms and find considerable substance in them. One specific criticism concerns the “shaping” of witness testimony by repeated pretrial interviews of witnesses and by the police and prosecution during the trial. He also criticizes the limitations put on police interrogation by the Miranda doctrine, which requires informing the suspect of his right to remain silent. The wave of recent cases of wrongful conviction has also drawn much attention to specific weaknesses in an adversarial justice system. One weakness is that the police can be under a lot of pressure to arrest someone, may use dubious tactics in interviewing witnesses and suspects, and may depend too much on not very credible witnesses who have a lot to gain by presenting testimony and making deals with police and lawyers. Another weakness, revealed by social science research, is that eyewitness testimony is more fallible than people generally assume. Identification of a perpetrator may be guided by lengthy police interviews that result in a bias that leads to the witness wrongly thinking that some innocent individual, who may have an appearance similar to the perpetrator’s, is the person she saw.

The basic impression conveyed by all these current criticisms of the adversarial system is that legal argumentation in North America has become so adversarial that winning has become all-consuming. But such adversarial excesses seem to be condoned, and even rewarded. Very aggressive prosecutors, instead of being censured for concealing evidence that was favorable to the other side in a case, have actually been promoted. Instead of being held responsible for wrongful conviction, many of these prosecutors have actually been rewarded for being so aggressive in doing what is perceived as their job. The whole perception that winning is all-important shows a lack of respect for evidence by the prosecutors. This phenomenon could be called *eristic drift*, in terms of the classification of types of dialogue in Chapter 2. It seems to endorse the fight theory, in which the trial is seen as a substitute for battle. It also indicates a failure to preserve the idea of the trial process as based on rational persuasion and a failure to grasp the importance of the collecting of information and the testing of it as essential parts of evidence. Such widely observed excesses fuel the perception that the adversarial system is out of control due to a marked *eristic drift*.

Pizzi is certainly right that trials such as the Simpson trial, which have had mass media coverage in detail, have shown the public many unfavorable

characteristics of how a trial is conducted in the current justice system. One thing that is obvious is the length of the trial, and what seems to be excessive delay as many relatively trivial matters are gone into in great depth. The lawyers dominate the trial, sometimes using highly dramatic emotional appeals, and at other times using tricky and clever arguments, as well as semantic subterfuges to get the best of the other side. They take advantage of technicalities in the many rules of procedure and evidence – rules that are complex and often hard to understand. The examination of witnesses is atomized into a lengthy series of small questions that often appear to be leading the witness toward some kind of trap. The typical witness, timid and hesitant when confronted with questions that seem to have an edge to them, cannot seem to provide a sequence of answers to the questions that add up to a coherent story. The sequence is broken up by objections from the opposing counsel, claiming that the testimony might be ‘hearsay’ or not relevant, or might tend to prejudice the jury.

In the Introduction to this book, it was pointed out that the problem is that juries especially are too often impressed with the kind of speech that is rhetorically powerful but that is not really based on rational argumentation. But it will now be argued that this is not a devastating problem for the adversary else system *per se*. It is a matter of how the adversarial system is implemented, how it is viewed as a structure of argumentation with rules that lead to a resolution of the originating conflict of opinion by means of rational argumentation, and how we conceive of adversarial argument as partly collaborative in nature.

7.3. *Information-Seeking in the Fair Trial*

I propose the hypothesis that the fair trial can be represented by a dialectical model in which an examination dialogue is embedded in a central persuasion dialogue (critical discussion) in which there are two opposed claims representing a conflict of opinions (Feteris, 1999). The purpose of the critical discussion is to resolve the conflict of opinions by means of rational argumentation. After the argumentation stage has been concluded, it is supposed to be possible to judge which side had the stronger or more persuasive argument, and that side is then declared the winner. How is this evaluation to be accomplished? It is done by judging the arguments in light of the rules for the dialogue. The critical discussion has rules that determine what kinds of arguments and argument moves are permitted at each stage. Certain forms of argument are recognized, and these forms of argument have a structure indicating the requirements for an argument having this form. It is also possible to judge how strongly persuasive an argument is in a given case – to judge what is called in legal terms the probative weight of the argument. Arguments are chained together in sequences on both sides of a case, and it is possible to sum up and assess the total weight of evidence furnished by all the argumentation on one side of the case. All these things

are possible in a critical discussion. And indeed, they must be possible if the conflict of opinions is to be resolved by rational argumentation.

A fair trial is not just a good fight, however, where both sides bring forward the most persuasive arguments to support their respective views, and where both use the strongest rebuttals to attack the views of the other side. Such a battle of opposed arguments could be not terribly useful to the trier in making rational deliberations on the outcome of the case if the arguments of both sides are ignorant of the facts of the case. The arguments must not only be logically persuasive in leading to the conclusion claimed. They must also be based on premises that contain genuine information about the facts of the case, as far as this can be established by sources of information such as eyewitness testimony and scientific evidence based on expert witness testimony. The notion of the fair trial can only make sense if the argumentation in the central persuasion dialogue is supported by evidence that comes into the court through information-seeking dialogue.

Information-seeking dialogue is often joined to another dialogue, such as a deliberation or persuasion dialogue. In such cases, the goal may not be to find just one fact, but to find out as much relevant information as is needed to solve a problem or arrive at an intelligent decision. Unlike the passerby case, where the questioner just wants to know one fact, the location of a building, the problem in most cases of information-seeking dialogue is that it is not clear to the questioner at the outset exactly what information she wants to find. For example, suppose you are writing an essay and searching in a data base for information on plots to kill Hitler. You know that there were some such plots, but you do not know much more about the subject. So you do an initial search, using key words such as 'Hitler', 'plot', or whatever other key words you think are related. As you begin the search, and get some titles, and even some articles on the subject, your search can improve as you learn better key words that elicit more of the information you need. The problem is that you cannot just get the facts, one by one, by asking specific choice questions, each one of which elicits a fact, or item of information. You have to start by getting a handle on the subject. So you start with some initial key words, and then follow up from these initial probes. In such a case, what is important is the purpose of searching out the information. The purpose may be to write an essay, taking the form of a critical discussion of a particular issue. That issue will define the problem of searching for information and will define what is relevant information. The information-seeking dialogue is embedded in a prior persuasion dialogue. It is this embedding of the one dialogue within the other that determines what is relevant in the information-seeking dialogue.

In a case of witness examination, the problem is somewhat different, because the examiner has already interviewed the respondent, or at least has some idea of what he will say in response to some questions. What the examiner wants to elicit is information that is relevant to the ultimate issue

of the trial. But the examiner also wants to elicit information that tends to support her side of the case. At least in the Anglo-American system of law, an examiner is also an advocate. So the examiner wants to elicit information that is useful for some purpose. To understand this purpose, we have to go back to the framework of the fair trial itself. The information is to be used in the trial. So relevant information will be information that has some place, or performs some function in the trial process. In other words, the key to evaluating appeal to witness testimony in a trial is to see the argumentation placed in a dual context. It is an embedding of the examination or information-seeking dialogue within the overarching persuasion dialogue that is the central format of the trial. In any sequence of examination used to interview a witness in a trial, what move by either party in the dialogue is or is not relevant should be determined by the normative model of the embedded dialogues. Whether the information is relevant should be determined by how it will function as evidence bearing probative weight on one side or the other of the conflict of opinions that is the basis of the trial.

There are two basic forces operating on cross-examination in Anglo-American law. One is fear of the unknown. The cross-examiner is afraid to ask any open question for fear that the witness might suddenly and unexpectedly defeat his side of the case by having a tremendous impact on the jury. The way evidence works in a trial, where a small item of evidence can play a pivotal role in tilting the burden one way or the other, even when embedded in a large mass of surrounding evidence, makes this fear a very real possibility. The other driving force is the possibility of impeaching the hostile witness, thereby, at one blow, knocking out of consideration some otherwise very powerful evidence that this witness has delivered or might deliver. This incentive is a powerful one, because the evidence of that witness might play a pivotal role in tilting the burden one way or the other, in the whole trial. To try to do this, the cross-examiner adopts the mode of questioning called "commit and contradict tactics" (Park, 2003, p. 145). She very carefully structures the sequence of questioning to get the questioner to go on record as making specific commitments, and then uses these recorded commitments as tools. One of the main uses of them is get the respondent to contradict himself, so that the contradiction can then be pointed out. The impact of this move on a judge or jury can be highly significant.

Now we know that the fair trial has two basic elements. One is the central critical discussion in which the advocates on both sides interact by arguing against each other. The other is the information on which their arguments are based. Each dialogue supports the other. But the relationship between the two dialogues seems complicated in several respects. One complicating factor is that witness testimony is not the simple input of factual information as pictured by the positivistic model. Witnesses can lie or be mistaken, and it cannot be taken for granted that information input through witness testimony is just a simple transfer of true propositions to the finder of fact in a trial. As shown by the consideration of expert opinion testimony, the

examiner has to probe into what the expert says, asking for clarification, posing critical questions, and sometimes even critically attacking the testimony of the expert. Thus the information-seeking dialogue itself has a critical discussion type of dialogue partly built into it. As the information comes in, it is constantly being tested and evaluated.

Against the inquisitorial system, it can be argued that self-interested attorneys are better motivated to collect information than a neutral judge would be (Strier, 1996, p. 143). Another point in favor of the adversary system is that it may do a better job of testing information through confrontation with an adversary really motivated to challenge its probative worth. If an adversary trial is conducted properly by a judge who applies the rules of evidence well, and if both attorneys are good lawyers, the persuasion dialogue that takes place can bring out the strongest relevant arguments on both sides, and also bring out the weaknesses on both sides. The inquisitorial trial lacks this persuasion dialogue component. Or, at least, it is not an overt verbal dialogue between the two sides. It all takes place inside the judge's head as she weighs the evidence on both sides. The overt dialogue that takes place, mainly the questioning of witnesses and the collection of evidence from documents, is a more pure form of information-seeking dialogue (or inquiry) uncontaminated by adversarial persuasion dialogue. But what kind of dialogue is that? It seems a misnomer to call it inquisitorial. It seems more like a kind of interrogation, classified as a subspecies of information-seeking dialogue. But just as the adversarial system can be criticized for its tendency toward eristic drift, the interrogation system can be criticized as rigid and one-sided, making the judge all-powerful and the witness or defendant into a kind of pawn or prisoner of the system.

Indeed, it can be questioned whether argumentation in the interrogation should be seen as inherently negative, a kind of degeneration of rational discussion, or whether it can be positive in some normative sense. In this sense, argumentation in the interrogation could be judged as correct or incorrect, successful or unsuccessful, in light of the proper aims of a well-conducted interrogation. Thus argumentation in an interrogation could be described as positive if it contributes to the goal of the interrogation dialogue. But there is a negative side as well, for as was shown in Chapter 5, there are traditional logical (informal) fallacies that have interesting connections with the interrogation. Thus, interrogation is not generally a method that will get the best results in a setting of rational argumentation.

The prominence of the fear of the unknown as a factor in a common law trial suggests that examination is a very weak tool for collecting information or getting to the real truth of a matter in this type of dialogue setting. Another factor is that witnesses are intimidated by a setting that looks so much like an interrogation, with this style of questioning. It is true that, in such a setting, the examiner will strongly hesitate to ask any open questions, and the witness will be very hesitant about offering frank answers. The examiner will often ask questions that look tricky, and indeed are meant to be tricky.

They look to the witness like snares for entrapment. Still, the whole purpose and rationale of the dialogue has to be sought in the adversarial nature of the trial itself. The basic idea is that the truth is elusive, and that some participants may even be trying to conceal it, because of their personal interests at stake. In this setting, the trickiness of “commit and contradict” tactics (Park, 2003, p. 145) is appropriate. The cross-examiner must have a strategy and must use tactics. One of the main tools is impeachment. If the witness can be shown by these tactics to be dishonest or evasive, his testimony is discredited. One of the most important assumptions of witness testimony, as indicated in the list of critical questions, is that the witness is honestly trying to tell the truth. If this assumption is successfully attacked, the testimony itself falls down as evidence.

8. Balance between Persuasion and Information in a Trial

The central argument of this chapter is that there are two different types of dialogue involved in the argumentation in a trial, and that one is embedded in the other. One is of course the persuasion dialogue or critical discussion that is the heart of the fair trial. The trial is based on a conflict of opinions, and the two opposed sides are supposed to present the strongest possible argumentation for each side (Feteris, 1999). The persuasion dialogue corresponds to what is often referred to as the advocacy system, especially prominent in Anglo-American law. This type of dialogue is highly visible at center stage of our legal system. But the second type of dialogue embedded in it is less visible. The other type is the information-seeking dialogue, which has to do with collecting the facts of a case, so that the argumentation in the persuasion dialogue in the case can be based on premises that include the relevant information in the case. For a trial to be successful, both types of dialogue are important. The persuasion dialogue is most often emphasized by lawyers in the Anglo-American system, who are strongly committed to the adversary system as the best way to see that justice is served by the legal system. But what is too often overlooked is that the persuasion dialogue may go off the track and come to a wrong outcome, if the argumentation is not based on full and accurate information that represents the relevant facts in the given case. Such a persuasion dialogue, even if based on the strongest and most able adversary argumentation on both sides, can be blind if it is based on limited information that leaves out relevant facts of the case. For the kind of plausible reasoning that is used in legal argumentation is defeasible, and is subject to defeat if new relevant information comes into a case.

8.1. *Reasoned Argumentation in a Fair Trial*

From this normative point of view on the argumentation in the trial, the American system, because it is so strongly committed to an adversarial

model, exhibits certain kinds of problems that can be detrimental to the quality of the argumentation in the system. Lawyers use crowd-pleasing appeals to emotions, take advantage of technicalities, and use rhetorical tricks and deceptions. Argumentation that is probatively weak gets in, while relevant information is filtered out. Suspects are encouraged to remain silent. The prosecution may suppress evidence. Relevant evidence may be ruled inadmissible on the grounds that it may tend to prejudice the jury, even though it may have probative weight. Adversarial examination techniques may frustrate the attempts of a witness to tell a coherent or informative story about what happened.

What can be done to ameliorate these problems, from the perspective of argumentation theory? Rather than trying to dictate specifics of how rules of procedure and evidence should be changed, argumentation theory should produce a framework of rational argument that is one part of the process. Legislators, judges, and other officials who are instrumental in making such changes can take such a framework into account to help make sense of the reasons for or against a proposed change. No theory of rational argumentation is sufficient, however. There are practical matters to be considered as well, such as how any change in the rules will affect future trials, and in particular, how costly the change might turn out to be. Even so, having some theory showing how appeals to witness testimony and other common forms of legal argumentation function properly as evidence in a trial setting is an important factor.

One thing, above all else, is that the purpose of the trial as an institution should take the importance of the information-seeking dialogue into account. It should not be taken for granted that the adversary system itself, especially if it is aggressively pursued as representing an eristic type of dialogue, is a sufficient guarantee of a fair trial. Even the critical discussion, as a form of persuasion dialogue, does not by itself guarantee finding the truth of a matter. In a trial a robust persuasion dialogue can go some way toward revealing the truth of a matter by bringing out and evaluating the strongest relevant arguments on both sides. By this means, the support for the claim made on each side is probed into, and it can be shown that the argumentation on one side is more plausible than that brought forward by the other side. But plausibility is a relative matter, depending on the information collected.

What needs to be done is to rethink the nature of the trial as a system that not only yields justice for both sides, but ideally does so in a way that bases a decision on reasoned argumentation. By reasoned argumentation should be meant argumentation that not only is persuasive, but also is based on what can be reasonably taken to be a full and coherent account of the relevant information in a given case. The problems cited above can stem from too much information being excluded, but also from too much dubious information being included. The problem is that irrelevance has become a

kind of tool that can be too easily used to exclude relevant evidence. Because relevance is not very well understood as a concept of legal evidence, it tends to be used as a kind of general category for many purposes. But relevance in relation to evidence in a trial should be taken to refer not only to relevance within the persuasion type of dialogue, but also to relevance in information-seeking dialogue. The subtlety is that in the trial, the persuasion dialogue depends on the information-seeking dialogue. Characteristically, then, relevance in a given sequence of argumentation in a trial format involves a shift from one type of dialogue to the other. The information extracted by the examination of witnesses in information-seeking dialogue is then used to draw conclusions relevant to the assessment of the arguments by the opposed counsels in the case. The shift is from information-seeking dialogue to persuasion dialogue where the information is used to draw conclusions about the ultimate issue of a case. Relevance can be evaluated dialectically in a given case by the method proposed in this book, but to do so involves a certain subtlety that affects all cases of argumentation in a trial. Relevance must always take the dialectical shift into account.

The first and most obvious hypothesis is to define relevant evidence in a trial using the model of the persuasion dialogue. The trial is seen as a critical discussion. Each side has a viewpoint, a thesis that is to be proved or have doubt raised about it, and something is relevant in a trial if it gives reasons to support or cast doubt on that ultimate *probandum*. This hypothesis is a pretty good one, as far as it goes. But there is another hypothesis that is even better, because it refines this first one. According to the second hypothesis, a trial is a critical discussion, but it also needs to be an informed critical discussion. On this hypothesis, relevant evidence needs to be defined not only by the critical discussion model, but also by the information-seeking model of dialogue. What is relevant evidence should be judged, according to this second hypothesis, on how well informed the critical discussion in the trial is, based on its taking into account the facts in the case.

What implications does this second hypothesis have for formulating trial rules? It implies that the trier should have, if not all the facts, at least enough of the information in a case to weigh the evidence on both sides and arrive at a reasoned decision. This means that the rules excluding evidence as irrelevant need to be reconsidered. For example, consider the federal rule stating that evidence should be inadmissible if it might prejudice the jury. The basis of this rule is presumably the perceived cognitive inadequacy of the jury. It is a problem, for example, that juries decide for overly generous awards to compensate individuals for harm by corporations, presumably motivated by emotional appeals such as appeal to pity. Another example is the character evidence rule that excludes evidence of prior misconduct as inadmissible. The second hypothesis implies that juries need to have information of a kind that makes the critical discussion in the trial adequately

informed. This implies that these rules need to be reconsidered to take information into account that really is relevant.

Juries may have a lot better cognitive skills for detecting bias and prejudice than this rule credits them with. But whether they do or not, the basis of the rule against admitting prior convictions needs to be rethought. According to Friedman (2003), the reason for such a rule should not be the cognitive inadequacy of the jury. The reason should be that evidence of prior convictions would cause the jury to decide the case on an improper basis. In either event, the misconduct can have substantial probative value, and thus it is relevant, meaning that it is information that the jury needs to know in order to have an informed critical discussion as the basis for arriving at an intelligent decision in a case. The jury cannot judge which side has enough evidence to meet its burden of proof based on the confrontation between the two sides if some of the facts that are relevant information are missing. Thus whatever the rationale of the previous convictions rule should be, it needs to be counterbalanced against the hypothesis that relevant evidence should include not only consideration of arguments that are persuasive or might be prejudicial or fallacious on both sides, but also on how well informed these arguments are. You cannot have a very good critical discussion of any subject if the participants are not well informed as to facts that are relevant to an informed discussion of that subject.

9. The Dialectical Structure of the Trial

If you look at the inquisitorial system as compared to the adversarial system, in broad outline, you can see that each system has a different way of collecting and utilizing information. Frankel (1980, pp. 42–4) described these differences in broad outline. In the inquisitorial system judicial officials seek out the evidence by interrogating witnesses and collecting all the information in a mass. In the adversarial system, the information is collected separately by the opposed sides. The judge may call witnesses or explore questions not raised by counsel, but in practice, this does not happen very often (Frankel, 1978, p. 43). All the information comes from material supplied by the defense or prosecution sides. The pieces of information are called ‘facts’. This terminology is misleading at first. It makes the adversarial trial seem as though it might be a historical inquiry into the truth of a matter to find out what really happened. But the epistemology of the trial does not play out that way. The so-called facts are really conclusions drawn by inference from argumentation schemes that represent admissible forms of evidence. For example, if a witness testifies that she saw an event happen in a certain way, then the statement that the event happened in this way is taken as a fact. This makes it sound permanent, like an undisputed fact in history that can be proved by documentation. But the facts in trials are not like that,

in many instances. For example, it may happen during examination that it is shown later that the witness was lying or mistaken. Then it is no longer a fact that the event happened in the way claimed by the witness. But still it is a fact that the witness originally said so. In other words, some 'facts' furnished as information are the premises of an argumentation scheme such as appeal to witness testimony. Others are conclusions drawn by inference from these initial facts. What one has to be careful to realize is that the so-called facts are often conclusions drawn by defeasible reasoning using argumentation schemes. Or to put it another way, the facts are statements that are accepted during the trial, according to the rules of evidence. Facts are better seen as information that is collected first during pretrial discovery procedures and made available to both sides. In civil cases, through discovery, both parties have access to materials from which the lawyers can construct a set comprising all the relevant factual propositions. As the argumentation proceeds through the trial process, these facts are employed by both sides through a sequence of nested dialogues in which the facts may be questioned and evaluated, and are redeployed using scripts to build up stories that appear plausible.

9.1. *Sequence of Dialogue Embeddings in the Trial*

A trial is a sequence of dialogues in which the dialogues are embedded into other dialogues of different types, and the whole sequence is embedded into a persuasion dialogue that provides the overarching structure of the sequence. At the pretrial discovery stage there is a set of facts that both sides have access to. At the opening stage of the trial itself, the lawyer for each side gives information to the jury as a plausible account of this evidence and claims that the evidence will show that the propositions in this story are acceptable. However, if the lawyer tries to shift to a persuasion dialogue at this point to show why these propositions prove the ultimate *probandum*, that can be objected to by the opposite side on the grounds that it is argumentative.

Next we come to the stage of examination and cross-examination of witnesses. This stage represents a different type of dialogue, which we have classified as examination dialogue in the previous chapters. When the lawyer calling the witness to testify seeks information, he selects out certain questions to ask. This selection of questions will be determined by the goals of the persuasion dialogue in which the examination dialogue is embedded. The aim is to elicit a set of propositions that can be used to persuade the decision maker that the evidence establishes a story that can be used to prove the ultimate *probandum* on his side of the case. The overarching goal is to establish a story that will prove this *probandum* to the required degree of certainty, under the rules of law, so that the judge will give a verdict in favor of his side. The cross-examiner asks questions of a peirastic nature that attempt to find weak points in this story, or even attack it as implausible. For example,

he may attack the credibility of the witness by finding inconsistencies in the story that was produced. The lawyer for the first side then completes this sequence of examination dialogue on redirect by using questions designed to restore the plausibility of the story. It should be noted that throughout this examination interlude the dialogue does conform to the rules for an information-seeking type of dialogue, in that either party can object to a question that calls for an inference from facts testified to by the witness. It may be objected that what was said 'calls for a conclusion' or 'calls for an opinion', and this objection implies that such testimony was improper.

During this sequence, other dialogues that call for decisions on such objections are embedded into the examination dialogue. For example, objections to the admissibility of witness testimony are metalogues in which both sides take turns in trying to persuade the judge about the legitimacy of a move in the examination dialogue. For example, one side might try to persuade the judge that a question is not proper, or that an argument is not relevant. Then there can be other intervals and opportunities for rebuttal. The closing argument by each side tries to persuade the judge or the jury that the argumentation to this point compels a verdict for his or her client. At this stage, each side may also challenge the argumentation of the other side by rebuttal arguments.

Once the argumentation stage is closed off, the trial then moves to the stage where the trier makes a decision on which side won or lost. The job to be done by the trier is to recall all the argumentation in all the embedded dialogues preceding this point and arrive at a reasoned decision as to which side fulfilled its burden of proof. This decision-making process is often called a deliberation dialogue, both in law and in common descriptions of the process of argumentation in a trial. However, in terms of the classification of types of dialogue in Chapter 5, it is not a deliberation dialogue, but more like a type of dialogue in which a critic who is not an advocate of the one side or the other considers the whole sequence of argumentation on both sides, and evaluates each as strong or weak. It is hard to classify this type of dialogue, and we leave it as an open problem here.

The role of the judge is to be an impartial arbiter. Her main job is to apply the rules of evidence, to determine which facts are admissible, and to avoid making errors of a kind that might later be grounds for an appeal. As pointed out by Frankel (1980, 44), the demands of the trial leave little time for reflection and analytical study needed for the judge to apply these rules. It is not acceptable to send a jury away for any great length of time in order to study a point. There is pressure to rule, quickly posed by what Frankel calls and the "demand for swift rulings" (p. 44). The judge might exclude something by using rules. For example, if something fits the rule regarding hearsay, the judge is supposed to exclude that. As shown in Chapter 1, legal argumentation is based on rules that are generally defeasible.

9.2. Summary of the Dialectical Model of the Trial

As noted in Section 8, the purpose of the trial is often stated to be not only one of justice but also one of truth. The trial is supposed to find the truth of a matter. But putting the aim of the trial in terms of a goal of truth is a kind of idealization. It is very important to recognize the limitations of the trial. The truth is hard to find, and in a legal dispute of the kind that goes to trial, if you set as your goal the finding of the truth of the matter in dispute, you are pretty well doomed to fail. The reason is that legal argumentation is, by and large in a trial, defeasible. The recent wave of wrongful conviction findings has shown this very clearly in the criminal justice system. From the point of view of the peirastic approach to evidence, it is much better to see the trial as a critical discussion, especially on the adversarial model of it. The goal of the trial, so conceived, is to revolve a conflict of opinions by rational argumentation. The goal of each side is to meet the requirements of burden of proof set by the rules for that kind of trial. This way of seeing the trial as a method of dispute resolution means that it can be successful even if there is insufficient evidence to conclusively prove that the claim of one side or the other is true.

It can be shown how the adversarial trial can resolve a conflict of opinions by rational argumentation by seeing how the rules of evidence and other trial rules ensure that the trial meets the requirements for a critical discussion. This can be shown by seeing how these rules correspond to the rules of the critical discussion model of dialogue in Chapter 4, Section 5.1. The rules of evidence require that a party who introduces evidence must show its logical relevance, and a party who objects to the introduction of such evidence must demonstrate that its exclusion is justified by the rules of evidence. These rules correspond to rules 2 and 3 of the critical discussion. Corresponding to rule 1 is the rule that the judge must not prevent either of the parties from offering evidence that supports or cast doubts on arguments relevant to the ultimate *probandum*. Corresponding to rules 6 and 7 of the critical discussion is the requirement that the arguments of both parties must be put forward during the trial and each must be contested by the other side. Corresponding to rule 5 is the comparable rule to the effect that at all stages of the trial implicit premises are taken to be commitments of arguments, but commitments that are subject to being revealed in questioning during the course of the argumentation sequence. Corresponding to rule 8 is the rule that arguments put forward during the argumentation stage of the trial must be justified or questioned based on the evidence admitted during the trial or on judicially noticed facts. Corresponding to rule 9 is that the ruling of the court is taken as conclusive resolution of the conflict of opinions, subject to the right to appeal. Corresponding to rule 10 is the general requirement that the rules that apply to a case should be formulated as clearly and precisely as possible and that the duty of the judge is to clarify these rules and offer explanations as needed.

Examination of expert scientific testimony is an important factor to illustrate how such rulings should be made a trial. As Redmayne put it (2001, p. 113), the choice is better seen as one between “strict and lax scrutiny”. If the case is not a hard one to decide, going with the generally accepted scientific opinion could be fine. But in many cases of the kind that go to trial, there are persuasive-sounding expert opinions on both sides. Therefore judges and juries do not need to and should not act like amateur scientists, pretending they have knowledge they do not possess. They need to adopt a peirastic stance that encourages active critical questioning and examination of reasons supporting an opinion, even that of a scientific expert. Peirastic skills are natural, although they can be improved and sharpened. They are widely used both inside and outside of science. The most productive attitude to adopt about this task for a nonexpert in a field examining expert opinion in that field is a middle way. Complete deference to the expert without questioning his or her opinion is one extreme. The other is to dismiss appeal to expert opinion as fallacious, refusing to learn from what experts say or take advantage of their being in a position to know.

Once again it may be useful to stress that the peirastic approach to witness testimony and examination is based on commitment, as opposed to belief. It is very natural in Western philosophy, and in commonly accepted ways of viewing rational argument and evidence as well, to frame argumentation in terms of truth, knowledge and belief. Knowledge is taken in a Platonic sense, meaning that if a statement is known to be true then it is true. Belief is taken in a psychological sense, associated with the BDI (belief–desire–intention) model of rational thinking. Most philosophical analyses of appeal to witness testimony as a form of rational argument have tried to formulate it exclusively in terms of belief. It is thought of as a form of argument that gives reasons for believing that something is true. The commitment model is weaker than the BDI and truth and knowledge frameworks, seeing rational argumentation as based only on commitment in dialogue. Commitment is weaker than belief, in that belief implies commitment, but the converse does not universally obtain. However, commitment does have implications. For example, if I am committed to the premises of an argument such as appeal to witness testimony, and the argument meets all the requirements of the argumentation scheme, then I am committed to the conclusion. However, it is important to reiterate that such an argument is defeasible. Commitments are sometimes retractable in a critical discussion. For example, if there is strong evidence that a witness was lying, I can and should retract my commitment to the conclusion of the argument based on the testimony of that witness that a certain event happened. The rationalistic tradition of scholarship on evidence in law has gone against this positivistic viewpoint by accepting a dialectical view of argumentation that sees relevance as centrally important and that accepts plausible reasoning as not being reducible to deductive or inductive logic.

Thus the peirastic view of witness testimony and examination is based on a dialectical epistemology of the trial that is quite different from the truth-based BDI view. In this dialectical epistemology, the so-called facts are not (necessarily) true statements. They are not known to be true, in general, nor do they even have to be believed to be true. In a trial, there are two sides. One side claims that a particular proposition is true, whereas the other side either doubts that claim or believes that proposition is false. Thus propositions that came in through information-seeking dialogue can provisionally be taken as factual, even though, in some instances, they may turn out to just be allegations that are later shown convincingly to be false. They are merely statements that are accepted as true, or better as holding, because they have been brought forward by the methods of seeking information that are accepted by the trial rules. For example, if a witness being examined under oath says that statement *A* is true, based on what she saw, then as far as the court is concerned, *A* is 'factual'. It is a bit of evidence, because it has come into the trial, supported by an argumentation scheme, appeal to witness testimony, that enables or even requires the trier to draw an inference from what was stated by the witness to a particular conclusion designated by the argumentation scheme. So *A* is a fact, so to speak, meaning that it is accepted now in the trial as evidence. This does not mean that *A* could not be tested later in the trial, fail the test, and cease to be a fact. Indeed, on the peirastic view, witness examination is this very kind of test.

This dialectical epistemology is a little hard to grasp at first, because of our positivistic preconceptions about evidence. It does not mean that we need to abandon the language of facts when describing legal reasoning of the kind used in a trial. It is quite nice to contrast fact and rule, as shown in Chapter 1, when describing the process of defeasible legal argumentation. It does mean we need to stop thinking of facts, in the trial context, as statements that are true and are known or believed to be true. Facts are statements that are tentatively accepted in a dialogue as representing reality because they meet standards of evidence that have been accepted as appropriate for that type of dialogue. They are statements that are accepted as holding as commitments within the trial framework. A statement may be accepted as a fact in a trial but then later, as more information comes in, it may be defeated, as the trial goes through its various stages and there are shifts from one type of dialogue to another. As long as each dialogue is embedded in the previous one in a proper manner, and as long as the argumentation in each dialogue follows the rules appropriate to that type of dialogue, the conflict of opinions can be resolved by means of rational argumentation. Thus the adversarial trial does have a structure that enables it to arrive at logically reasoned decisions based on evidence. It is adversarial because it contains advocacy on both sides, and the overarching type of dialogue is that of a persuasion dialogue. But it is also based on information-seeking dialogue that is embedded into the persuasion dialogue as the sequence continues. Within

this dialectical framework we can study types of evidence, such as witness testimony, by seeing each of them as conforming to requirement 7 of the argumentation schemes. Each scheme has its set of attached appropriate critical questions, meaning that dialogue is also involved in how we should evaluate an argument such as that from witness testimony. An argument from witness testimony can only be judged as evidence within the context of dialogue where it was used for some purpose. In this chapter an outline of the dialogue structure of the trial has been presented that shows how the trial as an existing institution can be analyzed dialectically, using the models of dialogue in Chapter 5.

Supporting and Attacking Witness Testimony

We begin this chapter by analyzing how evidence supporting witness testimony can be modeled as a kind of argumentation. This takes us back to the problems we encountered in Chapter 1 concerning the representation of corroborative evidence using argumentation technology. We continue the chapter by analyzing how argumentation that questions, attacks, or defeats arguments from witness testimony can be modeled. The second task is the more challenging of the two, because, as we have seen in the previous chapters, attacking witness testimony involves scripts and stories, and the kind of plausible reasoning used to support and to attack the arguments in them. In addition, we have seen that the engine for questioning in attacking witness testimony is the examination dialogue, and this type of dialogue has been so little studied in the literature on argumentation, artificial intelligence, and law that any attempt to apply it to witness testimony evidence is pioneering work. At present, the aim of much of this work is to develop systems of argumentation that might lead to applications in law in the not too distant future. However, because the theory of examination dialogue presented in this book is so new, even in argumentation theory, there is an additional task of showing how witness testimony can be formalized in such systems and implemented in computer programs for legal reasoning. The existing systems model arguments as sets of propositions, as premises and conclusions and arguments linked together to form chains of reasoning. This propositional type of model of legal argumentation is extremely useful for many purposes and provides the entry point to accomplishing the ultimate goal of analyzing and evaluating forms of legal evidence like witness testimony argumentation. But as Bench-Capon and Prakken (2005, p. 1) commented in their survey of how argumentation is being applied to the legal domain, much of the work is still at a stage where implemented systems are prototypes rather than finished systems.

In this chapter it is shown how existing systems of argument diagramming can represent cases of argumentation based on witness testimony using

the argumentation scheme for argument from witness testimony. The system called *Araucaria* has great potential for modeling legal argumentation. Version 3.1 even enables the user to switch from a standard diagram to a Wigmore-style diagram of the same argument. Using this kind of tool to model an argument as a precise sequence of reasoning from a set of premises to a conclusion is the first step in the analysis and evaluation of witness testimony as a form of argumentation. The main problem of developing this kind of system further as a tool for the analysis and evaluation of witness testimony as a species of argumentation concerns the critical questions matching the argumentation schemes. Fortunately, some recent work in artificial intelligence (Verheij, 2005) has addressed this problem. The next step taken in this chapter will be to show how a system devised by Verheij, DefLog, can provide a method of argument diagramming as well as a formal system for modeling argumentation schemes and how these schemes are attacked or defeated by the asking of critical questions. Third, the Carneades system is introduced. It was specifically designed to deal with the problem of modeling the critical questions matching an argumentation scheme in such a way that legal evidence based on schemes such as that for argument from witness testimony can be represented by the system. We have seen in Chapter 6 how argumentation in the examination of witness testimony in a trial is based on sequences of questions planned in advance by the questioner.

1. Corroborative Evidence

Let us go back to the problem of modeling corroboration of witness testimony studied in Chapter 1, Section 6. Say we have a typical case where two witnesses offer testimony to support the truth of the same proposition. Witness Aretha testifies that she saw Peter shoot George. Independently, witness Bill testifies that he saw Peter shoot George. In this case, according to the analysis presented in Chapter 2, we have a convergent argument. Indeed, it can be diagrammed as two separate arguments, each of which independently supports the conclusion that Peter shot George (see Figure 7.1).

Another way of diagramming the same argument would be to propose that the evidence provided by the second argument corroborates the evidence earlier provided by the first argument. On our analysis of corroboration, this interpretation could be modeled on an argument diagram by having the second argument support the truth telling premise of the first, instead of supporting its conclusion (see Figure 7.2).

On the analysis shown in Figure 7.2, first of all we have an argument from witness testimony going from the premise that witness Aretha testifies that she saw Peter shoot George to the conclusion that Peter shot George. Then we have a second argument from witness testimony from the premise that Bill testified that he saw Peter shoot George to the conclusion that witness

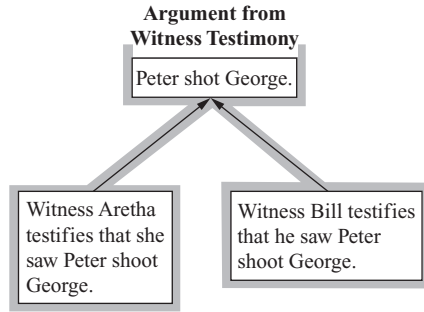


FIGURE 7.1. First method of diagramming corroborative evidence.

Aretha was telling the truth when she said that Peter shot George. The problem is to know the form of this argument. The logic of the situation is that when Bill testifies that he saw Peter shoot George, this adds credibility to what Aretha said, offering evidence that she is a trustworthy witness, because what she said agrees with what Bill said. Since we assume that Bill is trustworthy, insofar as we have no reason to doubt this yet, the agreement of the two accounts in effect suggests that the story told by both witnesses, each independent of the other, stands up to scrutiny. The account given, describing Peter shooting George, is a consistent account confirming that both witnesses agree on what happened. Thus by the standards of Chapter 3, when we compare the two stories, we come up with a consistent, plausible account.

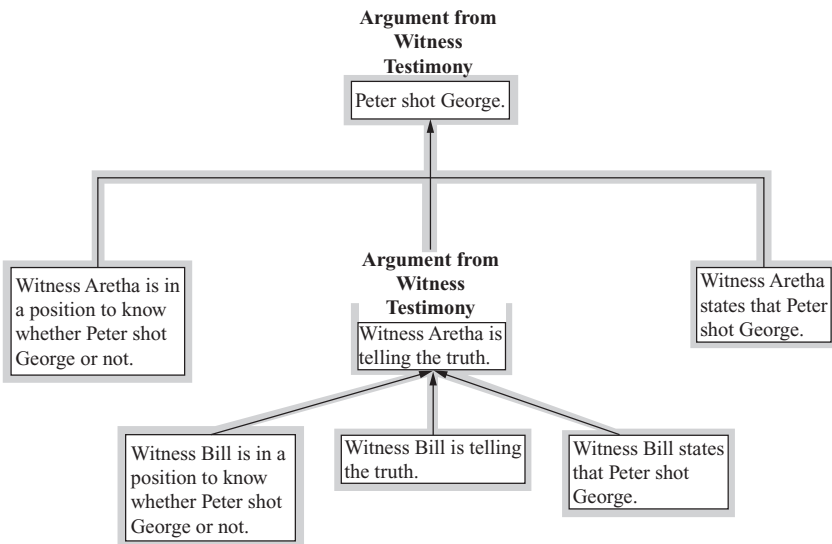


FIGURE 7.2. Second method of diagramming corroborative evidence.

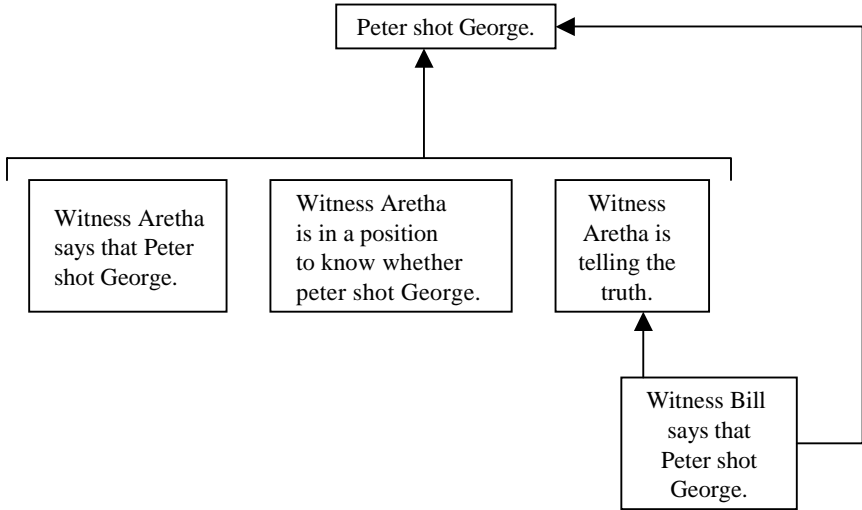


FIGURE 7.3. Argument diagram showing fallacy of double counting.

1.1. *The Fallacy of Double Counting*

Each of these two methods of diagramming the argument in this case makes the argument inherently reasonable by itself. The problem of double counting comes in when the two ways of analyzing the evidence are combined. According to a third way of diagramming the same argument, the premise that Bill testified that he saw Peter shoot George is taken to provide both kinds of support. First, it is taken to support the conclusion that Peter shot George. But second, it is also taken to provide corroborative evidence that supports the trustworthiness of the testimony offered by Aretha. When it is taken in this third way, the argument can be diagrammed as shown in Figure 7.3.

The fallacy of double counting is committed when the second instance of witness testimony evidence is taken both ways. It is taken as part of the convergent argument that provides additional evidence to support the conclusion directly, but then at the same time it is taken as evidence that corroborates other witness testimony also used to support that conclusion.¹ It is counted twice, but the assumption is that it should only be counted in one way or the other. That is, we have to make a choice whether the second witness testimony is taken as corroborating the first, or whether it is taken as direct evidence supporting the conclusion at issue.

The problem of how to analyze corroborative evidence has not been completely solved, however. There are two other hypotheses that need to

¹ The argument structure shown in Figure 7.3 cannot be diagrammed using *Araucaria*, as *Araucaria* only allows tree structures, whereas Figure 7.3 shows a closed sequence of argumentation.

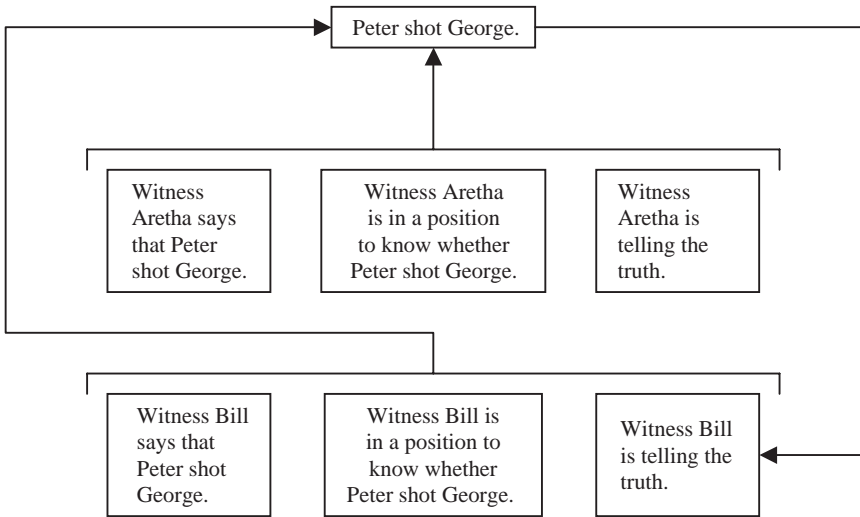


FIGURE 7.4. Diagram showing double counting as a circular argument.

be considered, in addition to the one proposed above. The first of this pair is an interpretation that can be represented by the argument diagram in Figure 7.4.

On the hypothesis represented by Figure 7.4, the witness testimony of Aretha is shown as evidence supporting the conclusion that Peter shot George. And independently, the witness testimony of Aretha is shown as evidence supporting the conclusion that Peter shot George. Here we have two linked arguments, each an argument from witness testimony, forming a convergent argument that supports the conclusion that Peter shot George. Then once the conclusion that Peter shot George is supported by this pair of arguments, it, in turn, supports the premise of one of them that witness Bill is telling the truth. But now what we have is a circular argument going from a set of premises in an argument that leads to the conclusion, and then back to one of its premises. The argumentation, as a whole, is circular. On hypothesis 2 then, the fallacy of double counting is portrayed as a species of circular argument.

1.2. A New Scheme for Corroborative Evidence

There is also a third method of diagramming corroborative evidence.² Instead of seeing corroborative evidence as supporting one premise of the argumentation scheme for witness testimony a different approach is to

² The first and third methods were put forward in a paper by Chris Reed and Douglas Walton to be published in the Proceedings of the Third International Conference of the Society for the Study of Argumentation (ISSA), June 2006.

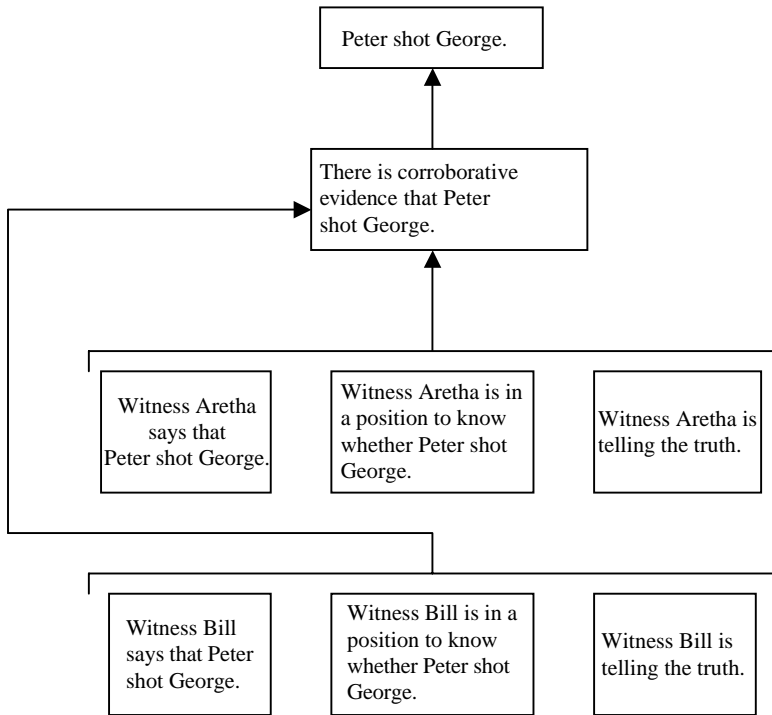


FIGURE 7.5. Diagram for corroborative witness testimony evidence.

employ a separate argumentation scheme that represents the notion of corroborative evidence. This hypothesis is diagrammed using Figure 7.5. The second box from the top represents an implicit premise (and it is also a conclusion) that has been inserted in the diagram. Each of the two arguments from witness testimony individually supports this premise as a conclusion, forming a convergent argument. This premise represents a new argumentation scheme for corroborative evidence.

On the analysis represented in Figure 7.5, the second box from the top is taken to represent a special argumentation scheme for corroborative evidence. But this diagram does not show what the scheme is. Reed and Walton (2006) proposed this third method of solving the problem of evaluating corroborative evidence, and introduced the following argumentation scheme.

Argumentation Scheme for Corroborative Evidence

Premise P1: There is an item of evidence E_1 for claim C .

...

Premise P n : There is an item of evidence E_n for claim C .

Premise P0: All of the items of evidence $E_1 \dots E_n$ corroborate C.

Conclusion C1: There is corroborative evidence for claim C.

This scheme can be applied to any number of instances of argument from witness testimony. The advantage of hypothesis 3 is that the new argumentation scheme can apply to any sort of evidence, not just witness testimony. It could, for example, be used to show how circumstantial evidence corroborates witness testimony evidence.

How this structure is to be represented on an *Araucaria* diagram is an unsettled issue, but a proposal for proceeding with this task is roughly indicated by Figure 7.6.

Figure 7.6 shows how evaluation of two instances of witness testimony evidence can be carried out. On the left, two items of evidence of witness testimony are given, each individually supporting the conclusion that Peter shot George. On the right, a third argument is shown, a linked argument based on the argumentation scheme for corroborative evidence (see just above). Note that this method enables us to model the evaluation of the evidence. Each of the two arguments on the left is plausible. But when the two are combined, using the scheme for corroborative evidence, as shown in the argument on the right, the new evidence furnished in this third argument boosts up the value of support for the conclusion to ‘highly plausible’. Numerical values could be put in for these probative weights, following the methods of Chapter 2.

To sum up then, we have three hypotheses that can be used to model corroborative evidence using the argument diagramming technique. Each seems to have its pros and cons. Which one will turn out to be best is hard to say at this point, and will be determined by future research. Still, at least we have been able to offer some methods for evaluating corroborative evidence that works up to a point, using the system of representing argumentation schemes and plausible reasoning on argument diagrams.

The general problem is that witness testimony evidence does not occur in typical legal cases as an isolated bit of evidence, or as the only kind of relevant evidence in a case. Typically it occurs as one small bit of defeasible evidence, that is very weak in itself, but that is combined with many other arguments of various kinds that are all connected together to form a mass evidence in the case. An evidence chart, a form of argument diagram, used by Wigmore, can exhibit such a mass of evidence in a case at trial. The problem here is that the argument diagram can and quite often typically is quite extensive, with perhaps even hundreds or thousands of propositions that need to be taken into account. We can look at a given individual argument from witness testimony as an isolated argument that fits the requirements of the argumentation scheme for argument from witness testimony. We can evaluate the premises as plausible or not, and we can use the methods of Chapter 2 to make calculations when drawing an inference from these premises. For

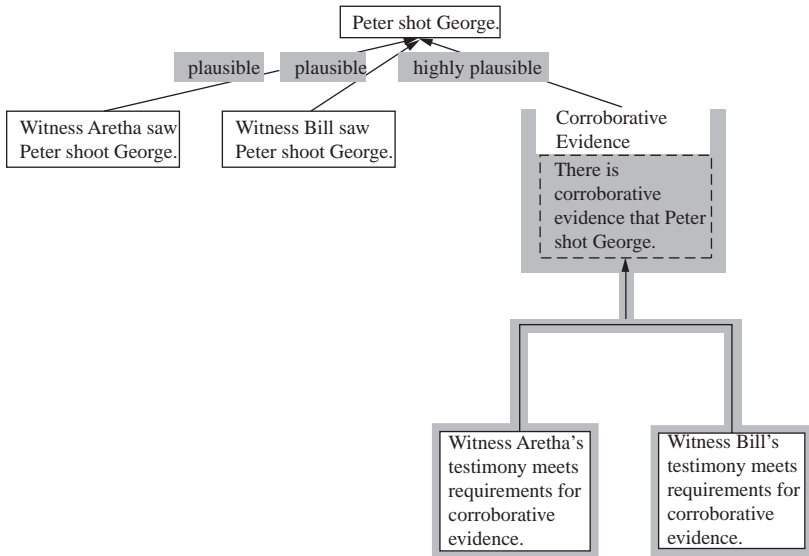


FIGURE 7.6. Using a scheme for corroborative evidence in *Araucaria*.

example, if the premises are highly plausible, and the argument fits the argumentation scheme for the argument from witness testimony precisely, then it may be that we should evaluate the conclusion as highly plausible too. However, once we have reached that point, we may need to judge whether the premises are plausible by judging what kind of evidence supports them. We may also have to judge how the ultimate conclusion at issue in the case is drawn by some chain of reasonable inferences from the conclusion of the argument from witness testimony we are considering. To do this we may have to make all kinds of adjustments. We may have to look at, for example, circumstantial evidence, such as forensic evidence, based on expert witness testimony of a forensic specialist. So the problem is how we can evaluate a single instance of witness testimony as evidence in a trial in which this single piece of evidence is connected with many other pieces of evidence that may influence how we evaluate it.

2. New Computational Systems for Legal Argumentation

Recently there has been considerable interest in argumentation schemes in artificial intelligence, where they are increasingly being recognized in multiagent systems as tools useful for developing the reasoning capabilities of artificial agents (Reed and Norman, 2004; Verheij, 2003). The next step required is the formalization of argumentation systems for uses in computing. The task of formalization is a large job, however, because there are many schemes exhibiting a wide variety of argument types, based on

many different kinds of variables and constants. Some schemes can be subsumed under others, but the project of classifying schemes has proved harder than was initially anticipated. Two proposals that offer methods that can be used to begin the project of formalization have been offered.

2.1. *The DefLog System*

Verheij (2003b) proposed a method for formalizing argumentation schemes that is based on the premise that there is a structural resemblance between logical rules of inference such as *modus ponens* and defeasible argumentation schemes such as argument from witness testimony. His method is to treat argumentation schemes as inferences having the following premise–conclusion form (Verheij, 2003b, p. 170):

Premise 1. Premise 2. . . . Premise *n*. Therefore Conclusion.

Verheij (2003b, p. 177) uses an argument diagramming method called ArguMed to show how argumentation schemes apply to argumentation in any given case. How the ArguMed works, and how it is different from *Araucaria*, is indicated by the argument diagram in Figure 7.7, redrawn from the diagram in Verheij 2003b, p. 177).

This argument structure can fit any of argumentation schemes, including deductive ones like strict *modus ponens* and defeasible ones like defeasible *modus ponens*. In the latter kinds of arguments, the premises do not justify the conclusion beyond doubt, because the generalization that is the major premise of the inference is subject to exceptions. Thus one of the important steps in the investigation of formalizing schemes is to determine the exceptions that open a scheme to challenge or rebuttal (Verheij, 2003b, p. 174). In ArguMed, the blocking moves that make an argument default are drawn on the argument diagram by a device called entanglement, represented as a line that meets another line at a junction marked by an X. Entanglement indicates the presence of new evidence that rebuts or attacks the inferential link between the premises and conclusion of the original argument, making that argument default. One of the most interesting things about Verheij's approach is that he showed a way of modeling the critical questions as ways of attacking such an inferential link, and distinguished between different ways the questions do this.

Verheij proposed a method that treats some critical questions as undercutters of an argument and treats others as argument defeaters. Critical questions that point to exceptions to a generalization are said to undercut an argument, while other critical questions are cast in a stronger role. The latter type are seen as refuting the original argument by either denying assumptions on which it rests or by pointing to counterarguments that lead to a conclusion that is the negation of the original one. In general, Verheij showed that critical questions can play four different roles:

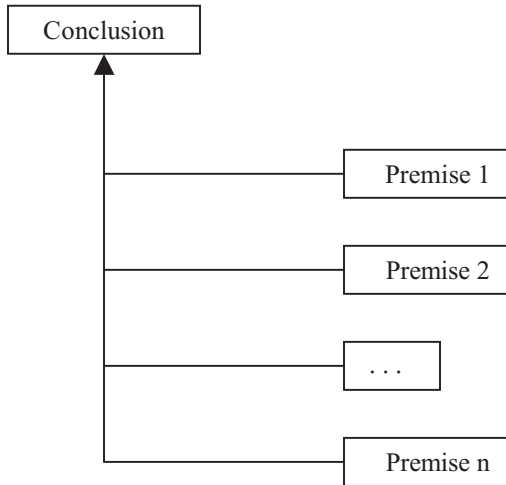


FIGURE 7.7. An argument represented in the ArguMed diagramming system.

They can be used to question whether a premise of a scheme holds.

They can point to exceptional situations in which a scheme should not be used.

They can set conditions for the proper use of a scheme.

They can point to other arguments that might be used to attack the scheme.

Based on these insights, Verheij (2003a) developed a formal system of defeasible reasoning called DefLog that represents some critical questions as undercutters of a scheme while others play the role of defeaters.³

Defeaters are not so hard to represent in a standard argument diagram. A defeater can be represented as a new argument that has the opposite conclusion to the original argument being attacked. But it is more difficult to represent undercutters in a standard argument diagram, because the lines representing the inferences always go to a node representing a statement that is a premise or a conclusion. It requires a more complex technology to represent an argument diagram in which two lines made other lines. Because DefLog is such a nonstandard technology, it can represent undercutters, as shown by the diagram in Figure 7.8.

This diagram represents an argument from expert opinion in which the two bottom premises support the conclusion, but the top premise functions as an undercutter. Once the top premise is taken into account, the previous argument, based on the two premises beneath it, is undercut.

³ See Chapter 1 on this distinction.

We have argued in this book that the only way to carry out such a global evaluation of witness testimony as evidence in any realistic case of a trial is to see it in a context of dialogue in which two sides are represented. The basic problem we have always confronted is that the critical questions matching the argumentation scheme cannot themselves be represented as premises or conclusions on an argument diagram. But recent research in artificial intelligence is developing a method of doing precisely that. There is a new system, called *Carneades*, currently under development, that can represent each of the critical questions matching an argumentation scheme as either explicit or implicit premises of that scheme. Once this new system has been implemented, it will give us an automated method of constructing argument diagrams representing a mass of evidence at trial that can include not only argumentation schemes represented on the diagram, but also premises of each scheme matching all the critical questions for that scheme. Here we can give a brief and tentative idea of how this system will work. By this means, we can see ahead to the future when witness testimony evidence, and other familiar kinds of evidence used in trials, can be represented on an argument diagram.

2.2. *The Carneades System*

The *Carneades* system is a computational model that builds on technologies from the semantic web to provide a platform for using argumentation schemes for argument analysis, construction, and evaluation. This system provides an abstract functional specification of a computer program that defines structures for representing various elements of argumentation, including atomic propositions, arguments, cases, issues, argumentation schemes, and proof standards. The *Carneades* system offers yet another method using of argument diagramming using the standard model of the semantic web, that of the directed graph in which the nodes represent objects and the arrows represent binary relations. The following expression is an example of an atom:

(asserts Aretha (shot Peter George))

Argumentation is viewed as a process that determines which atoms should be included in a domain model or excluded from it. This process works like a formal dialogue system that keeps track of commitments. What is called an issue is a record for keeping track of the arguments pro and con each position (Gordon, 2005, p. 55). A position is a proposed or claimed value of some attribute of an entity, and the status of each position. A position can be accepted, rejected, or undecided. The elements of the system include statements, arguments, cases, issues, argumentation schemes, and proof standards. An argument is defined as a triple, made up of a statement designated as the conclusion, a direction, pro or con, and a set of premises (statements).

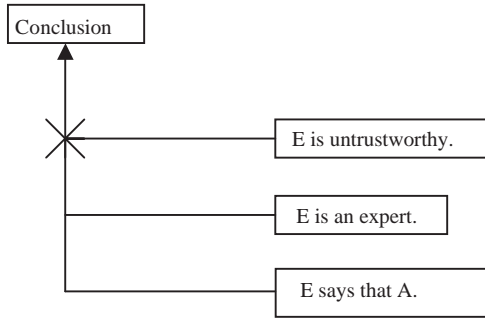


FIGURE 7.8. Defeat of argument from expert opinion in DefLog.

The most important feature of Carneades, for our purposes, is how it models critical questions matching an argumentation scheme. Critical questions are modeled as three types of premises called antecedents, assumptions, and exceptions. Assumptions are assumed to be acceptable unless called into question. Exceptions are modeled as premises that are not assumed to be acceptable and that can undercut an argument as it proceeds. Ordinary premises of an argument are assumed to be acceptable, but they must be supported by further arguments to be judged acceptable. Each argument is provided with an identifier or id. The following definition (Gordon, 2005, p. 56) displays the data type for arguments:

```
type argument
= {id: id,
  direction: {pro, con},
  consequent: atom,
  ordinary premises: atom list,
  presumptions: atom list,
  exceptions: atom list}
```

Each argument is provided with an identifier. Using this feature, an applicability presumption of the form (applies <argument-id> true) is added to every argument. Defeaters (rebuttals) are modeled as arguments in the opposite direction for the same consequent. Thus if one argument is pro the consequent its rebuttal would be an argument con the same consequent. Premise defeat is modeled by an argument con an antecedent or presumption, or pro an exception (Gordon, 2005, p. 56). Undercutters are modeled by arguments and an implicit applicability assumption that can be added to each argument. Using this method, an undercutter of an argument n is modeled as an argument con the atom (applies arg- n true). Carneades has a dialectical aspect of argument analysis and evaluation, as arguments are judged acceptable or not in relation to an issue being discussed. An issue functions as a record for keeping track of the arguments pro and con each

position as the argument progresses through the dialogue (Prakken, Gordon and Walton, 2007). A statement can be accepted, rejected or at issue. Whether a premise holds in any given argument depends on its dialectical status.

There are different ways an argument can be attacked, following the influential distinction of Pollock between defeaters and undercutters. Defeaters (rebuttals) are modeled as arguments in the opposite direction for the same consequent. For example if one argument is pro the consequent its rebuttal would be another argument con the same consequent. Premise defeat is modeled by an argument con an antecedent or assumption or pro an exception (Gordon, 2005, p. 56). Undercutters are modeled by arguments and an implicit applicability presumption that can be added to each argument. Using this method, an undercutter of an argument n is modeled as an argument con the atom (applies arg- n true). Pollock's standard example of the red light is used to illustrate how this works in Gordon and Walton (2006, p. 8).

2.3. *Schemes and Critical Questions in Carneades*

The key motivation of the Carneades system is its capability for dealing with the problem posed by the two different theories of what happens when a respondent asks a critical question (Walton and Gordon, 2005). On one theory, when a critical question is asked by a respondent, the burden of proof shifts to the proponent's side to answer it. If the proponent fails to do this, the proponent's argument fails. On the other theory, the proponent's argument does not fail until the respondent offers some evidence to back up the critical question. Carneades solves this problem by distinguishing three types of premises, called ordinary premises, assumptions, and exceptions. Assumptions are assumed to be acceptable unless called into question. Ordinary premises are automatically classified as assumptions. Both of these kinds of premises are taken to hold unless they are at issue. Exceptions, on the other hand, are taken not to hold. An exception can block or undercut the acceptability of an argument as a dialogue proceeds if evidence comes in supporting the statement classified as an exception in the argument. It does this by revealing assumptions and exceptions as implicit premises in a given argument as the argument is critically questioned or attacked.

The solution of Carneades to the problem of critical questions is provided by its capability to support dialogue structures that enable implicit premises to be revealed dynamically as a dialogue proceeds. The status of statements as accepted or not can change during the course of a dialogue. The acceptability of a statement also depends on its proof standard. The four proof standards are scintilla of evidence, preponderance of the evidence, dialectical validity, and beyond a reasonable doubt (Gordon and Walton, 2006). In response to an argumentation scheme, each critical question is

modeled as a assumption placing a burden of proof on the proponent, or as an exception placing the burden on the respondent. Even after the respondent has made an issue out of the statement in an exception, the statement continues to hold until sufficient evidence has been presented to show that it does not hold. Thus Carneades allows the burden of proof to be assigned to either the proponent or the respondent in a dialogue, depending on how the premises of a given argumentation scheme are classified.

The following example (Gordon, 2005, p. 55) shows how Carneades analyzes the scheme for argument from expert opinion, where the conclusion is statement *A*.

Argument from Expert Opinion in Carneades

```
id: arg-i
direction: pro,
scheme: argument-from-expert-opinion, conclusion: (A true),
ordinary premises:
  (isa e expert-testimony)
  (domain e d)
  (assertion e (A true))
  (within d (A true)),
presumptions:
  (credible e true)
  (based-on-evidence e true),
exceptions:
  (trustworthy e false)
  (consistent-with-other-experts e false)
```

The four ordinary premises that the expert really is an expert, that she is an expert in the subject domain of the claim, that she asserted the claim in question, and that the claim is in the subject domain in which she is an expert, are assumed to hold. The two assumptions that the expert is credible as an expert and that what she says is based on evidence are taken to hold. The additional two premises that the expert is not trustworthy and that what she says is not consistent with what other experts say are assumed not to hold, until such time as new evidence comes in showing that they are acceptable. The exceptions are like exceptions to a rule in defeasible reasoning.

Arguments in the Carneades system can be visualized using argument diagrams in a way compatible with the semantic web, using an XML syntax. This sort of diagram visualizes an argument as a directed graph in which the nodes can represent statements or arguments and the arrows joining the nodes represent inferences from a set of premises to a conclusion, or from an argument to a conclusion. An argument is identified by recognizing its scheme, and its direction, pro or con.

Figure 7.9 shows how Carneades represents a typical case of contested evidence based on argumentation from expert opinion. In this case there are two experts E1 and E2, each of whom testifies to the same proposition, designated in Figure 7.9 as S, the statement in the top box. There are two arguments in the case, labeled a1 and a2 in the diagram. Each is represented as a node in the graph and visualized within a circle, showing that it is an argument. Within the node, information about the scheme of the argument represented can be contained. In this case both arguments fit the scheme for argument from expert opinion. The first premise of a1 is the statement ‘E1 says S is true’. It is represented on the diagram as an ordinary premise. Hence there is no arrowhead on the line joining it to node a1. The third premise, ‘E1 is an expert in the domain of S’, is represented as an assumption of the argument from expert opinion. Hence there is a darkened dot (nodot) on the line joining it to node a1. The second premise of a1 is the statement ‘E1 is not trustworthy’. It is represented on the diagram as an exception. Hence there is an open dot on the line joining it to node a1. Looking to the left of the diagram, the reader can see that argument a2 has the same structure. So far, then, we have two arguments from expert opinion each independently supporting the conclusion S.

Next we need to look at the remaining two arguments, a3 and a4. Argument a3 supports the conclusion that E1 is not trustworthy. The reason given is the statement ‘E2 says that E1 is not trustworthy because he is biased’. The premise ‘E1 is not trustworthy’ is an exception according to the analysis of argument from expert opinion provided by Carneades. Thus the argument from expert opinion is only defeated if the critical questioner gives evidence to support it. What he has to do is show that in this particular case there is an exception to the rule that experts are generally trustworthy. In this particular case, the questioner has presented such evidence by bringing forward argument a3. If we look to the left side of the diagram, we can say that a4 has the same structure.

The reader will observe that some of the nodes in Figure 7.9 are darkened while others are not. When the node containing a statement or argument is darkened, it means that the statement or argument contained in that node has been accepted. The reader will recall that in Carneades statements or arguments can be at issue or not at issue, and can be accepted or not accepted. On the basis of these determinations, a statement or argument can be judged to be acceptable or not. In the case of both arguments, two of the premises are accepted, while the other premise is not. This means that both arguments are accepted, which in turn is taken to imply that the conclusion S is acceptable. The two bottom nodes are not darkened, meaning that neither of these statements is acceptable. But what would happen if one of these statements was acceptable? Suppose it was acceptable, for example, that E1 says E2 is not trustworthy because he is biased. This would mean

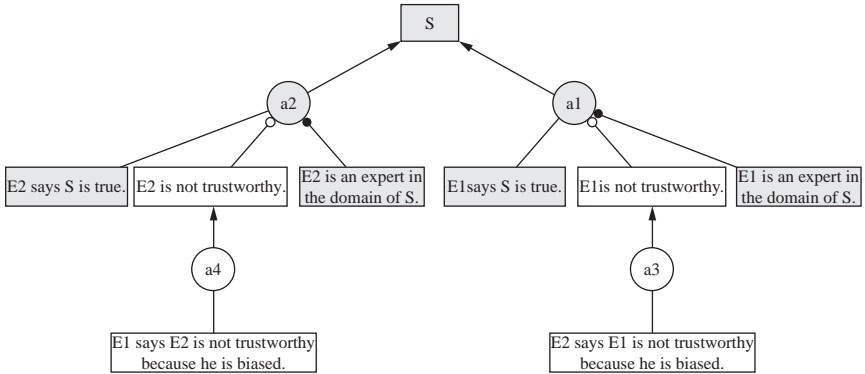


FIGURE 7.9. Example of argument from expert opinion in Carneades.

that a_4 is acceptable, which would prove that the statement that E_2 is not trustworthy is acceptable. This would defeat argument a_2 , and the circle containing a_2 would no longer be darkened.

The reason that this particular example is especially interesting is that each of the experts independently claims that the other is not trustworthy because he is biased. In such a case we might well want to extend the analysis of the argumentation still further by asking whether each of these experts can make such a claim on good grounds. The problem is that if the one expert says the other is not trustworthy because he is biased, while the other replies that the former expert is not trustworthy because he is biased, the chain of argumentation as a whole seems highly suspect. Here we will not go on to discuss how the analysis of the example might be extended to take these further complications into account. The case is simply offered to show how Carneades models a typical kind of argument from expert opinion of the kind that might be contentious, but that illustrates features like how the argument is visualized as a graph, and how arguments with their premises and conclusions are represented.

3. Witness Testimony in Carneades

One big asset is that Carneades models the critical questions matching any given argumentation scheme by representing them as atoms that can operate as different kinds of premises of the scheme. The antecedents correspond to the normal premises of a scheme. One of them is the generalization, often called the rule or conditional of the argument. The assumptions are additional premises that operate like critical questions, in that they require justification, and can make the argument default if they are questioned and no justification is provided. The exceptions correspond to exceptions to a rule in defeasible reasoning. For example, in the Tweety argument,

it is assumed that Tweety is not a penguin, or more generally that Tweety does not fit some category of exception to the rule that birds fly. To make the argument default, a critic has to argue that Tweety fits one of these categories of exceptional cases by backing it up with justification for that claim.

3.1. *The Scheme and the Critical Questions*

Let us see how this model would apply to the scheme for argument from witness testimony presented in Chapter 1, Section 10, reprinted below.

Argument from Witness Testimony

Position to Know Premise: Witness *W* is in a position to know whether *A* is true or not.

Truth Telling Premise: Witness *W* is telling the truth (as *W* knows it).

Statement Premise: Witness *W* states that *A* is true (false).

Conclusion: Therefore (defeasibly) *A* is true (false).

The generalization on which this scheme is based is the following additional premise.

Generalization: If (witness *W* is in a position to know whether *A* is true or not, and witness *W* is telling the truth (as *W* knows it), and witness *W* states that *A* is true (false)), then (defeasibly) *A* is true (false)).

Next, we list the five critical questions matching the scheme, along with the bias subquestion, as follows.

Five Critical Questions Matching the Argument from Witness Testimony

Internal Consistency Question: Is what the witness said internally consistent?

Factual Consistency Question: Is what the witness said consistent with the known facts of the case (based on evidence apart from what the witness testified to)?

Consistency with Other Witnesses Question: Is what the witness said consistent with what other witnesses have (independently) testified to?

Trustworthiness Question: Is the witness personally reliable as a source?

Plausibility Question: How plausible is the statement *A* asserted by the witness?

Subquestion of the Trustworthiness Question

Bias Question: Is there some kind of bias that can be attributed to the account given by the witness?

Next, what we need to do is to classify each of the five critical questions matching this scheme, and the bias subquestion as well, as being an

antecedent, assumption or an exception. To consider how to do this, we begin by reviewing how each category was defined above in Carneades.

Antecedents: assumed to hold, but if questioned, must be supported by further arguments to be evaluated as acceptable. Once an antecedent is questioned, the argument immediately defaults until further arguments are presented.

Assumptions: assumed to hold unless questioned, then assumed not to hold until the question is answered. Once an assumption is questioned, the argument immediately defaults until further evidence is presented.

Exceptions: When questioned, the argument only defaults if appropriate evidence is brought forward to show the exception holds. The argument only defaults once such evidence is presented. However, if merely questioned, without such evidence having been presented, the argument does not default.

It would seem that the internal consistency question should be classified as an exception, because we would normally assume that what a witness said is internally consistent, unless we had some evidence to the contrary provided by some apparent contradiction in what she said. Thus to ask the internal consistency question, the respondent should be able to cite a specific instance where there appears to be an inconsistency and offer some evidence that what was said is inconsistent. Likewise, the factual consistency question should require some evidence from the respondent that something the witness said is not consistent with the known facts of the case. Successfully asking such a question would therefore seem to require evidence showing that there exist such facts and evidence showing how they relate to whatever the witness said that appears to be inconsistent with them. The consistency-with-other-witnesses question also seems to be an exception, for much the same reasons. If it is questioned whether what the witness said is consistent with what other witnesses have said, some evidence has to be given that some other witness said something that is not consistent with what the first witness said.

When we come to the trustworthiness question, the situation seems to be a little different. The truth-telling premise of the scheme already implies that the witness is personally reliable, in other words, that she is telling the truth as she knows it. Thus it would seem that the trustworthiness question should be classified as an antecedent of the scheme. The plausibility question is a little more difficult to deal with as stated because it is expressed as a matter of degree, asking how plausible the statement asserted by the witness is. Although it is practically useful, as a way of teaching students or would-be critics how to question an argument, putting it in a specific format so that it could be automated in a computer system is a problem. Perhaps for this purpose it might be better to rephrase the plausibility question as asking

whether the statement made by the witness is plausible. In other words, if it is not plausible, the respondent should point out why by asking specific questions that express doubts about its plausibility. Here we might refer to the example cited by Wigmore (see Chapter 2) where the witness claimed to have paid in cash, but it was later shown that he could not possibly have carried this amount of cash. The problem was that the claim that he made simply was not plausible. So how should we represent this question? Should it be an antecedent, an assumption, or an exception? Perhaps this critical question could best be classified as an assumption that is assumed to hold unless questioned, and assumed not to hold until the question is answered. It might be generally assumed to hold that what the witnesses said is plausible, but if it is questioned as being implausible, then it is assumed not to hold until some answer to the question is given.

The bias question is a subquestion that comes under the general heading of the trustworthiness question, but it may be that we need to treat it differently from the trustworthiness question. In the case of the bias question it seems reasonable to maintain that the respondent needs to identify some specific kind of bias, or give some kind of evidence to show that this bias exists, based on what the witness said, in order for the question to have any force. If this is a reasonable analysis, the bias question should be treated as an exception.

These results can be summed up as follows.

Internal Consistency Question: exception.

Factual Consistency Question: exception.

Consistency with Other Witnesses Question: exception.

Trustworthiness Question: antecedent.

Plausibility Question: assumption.

Bias Question: exception.

There can be room for further argument here on whether these six critical questions matching the argument from witness testimony have properly been classified above. It could be contended that to fit the requirements of the Carneades model, some of the questions should be reconfigured to make them more precise, or at least easier to model in a formalization. Further research is needed to solve these problems, but in general, the nice thing about this way of viewing the critical questions is that we can model them all as atoms that are components of the argumentation scheme. We can, in effect, see them as propositions that can be represented as premises or conclusions in an argument diagram representing evidence in a legal case at trial.

3.2. *Corroborative Testimony in Carneades*

Corroboration of witness testimony evidence by other witness testimony evidence is represented in Carneades by a structure like that visualized in

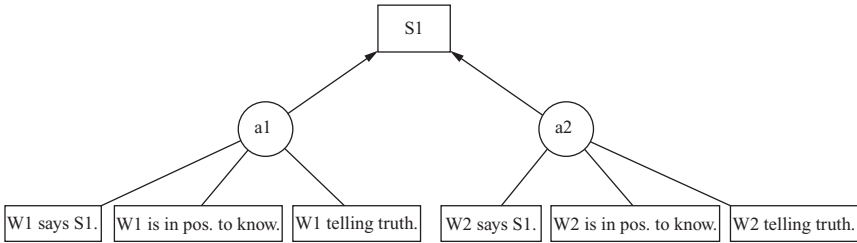


FIGURE 7.10. Corroboration of witness testimony in Carneades.

Figure 7.10. For example, S1 could be the statement that Peter shot George, W1 could be Aretha, and W2 could be Bill. Thus Figure 7.10 represents a typical case where one argument from witness testimony corroborates another one. Suppose that all six statements represented as premises along the bottom row of the diagram are acceptable. Given the argumentation scheme for argument from witness testimony, this evidence would warrant the acceptance of arguments a1 and a2. If this were the case, all six text boxes in the bottom row of the diagram would be darkened, and the circles containing a1 and a2 would also be darkened. This would provide evidence to support conclusion S1. Would this mean that S1 was acceptable? It would depend on the standard of proof applicable to the case. This in turn would depend on factors concerning the context of dialogue, for example, whether the case was a civil trial or a criminal trial. In a civil trial the standard of proof is generally that of preponderance of the evidence, whereas in a criminal trial the standard is that of proof beyond a reasonable doubt.

From the previous discussions of how *Araucaria* represented corroboration of witness testimony in Section 1, we already know that the situation is not so simple and that there can be other ways of modeling how corroboration works. One way, represented in Figure 1.11, is to see the testimony of the second witness as corroborating that of the first by suggesting that the first witness was indeed telling the truth.

There is also a third way of modeling corroborative witness testimony in Carneades, represented in Figure 7.12. This third way of representing corroboration of one instance of witness testimony by another is more complex. a1 supports S1, the conclusion, which in turn supports the premise of a2 stating that W2 is telling the truth, and a2 supports a1. This produces a sequence of argumentation that is circular. a1 is part of the evidence that supports a2 and a2 is part of the evidence that supports a1. In short, Carneades models corroborative witness testimony evidence in a way that is broadly similar in outline to the way *Araucaria* models it. Both reveal a problem in the evidence in this kind of case by revealing an interdependency in the chain of reasoning.

What this shows is hard to tell, however. What it may show is that the argumentation shown in Figure 7.12 reveals double counting of a kind

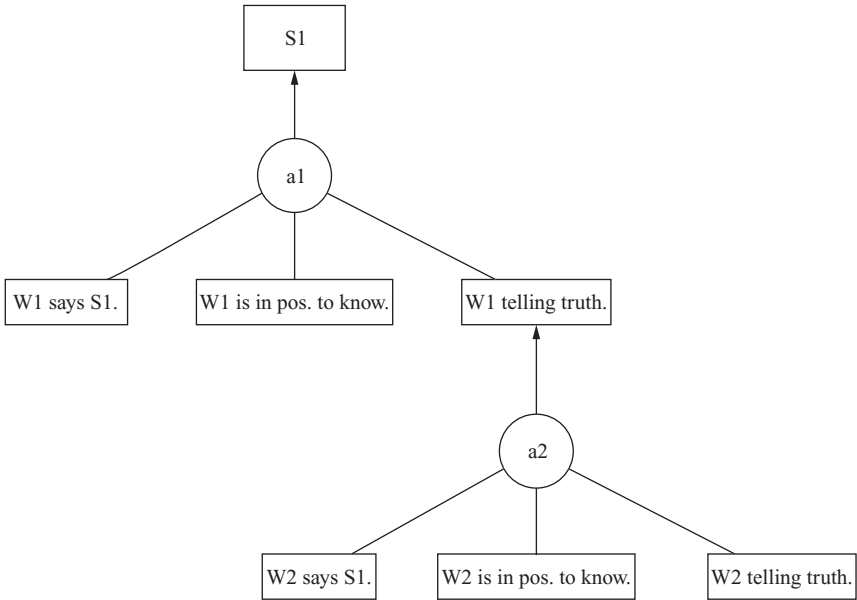


FIGURE 7.11. Second way of modeling corroborative witness testimony in Carneades.

that is illegitimate and should not be taken as a proper interpretation of collaborative witness testimony. Figure 7.11 shows the proper kind of collaborative witness testimony, where the testimony of W2 supports that of W1, but where no use of the testimony of W1 is made to support the testimony of W2. But this does not seem quite right, however. Surely mutually supporting witness testimony does, in some cases, boost the plausibility value of the combined arguments from witness testimony as evidence. Thus we do not appear to have solved the problems posed by double counting. The best we can say is that by being able to represent double counting and other instances of multiple witness testimony evidence by means of argument diagrams, and by means of the computational systems we have examined, we can at least represent the problem in a more precise way. This capability shows the importance of research on circular kinds of reasoning, such as that involved in double counting, to set reasonable conditions for determining when such reasoning should properly be considered problematic, or should even be classified as falling under the heading of the fallacy of begging the question.

3.3. Further Research on Carneades

It may seem that, having eliminated the critical questions, and replaced them by premises and conclusions of a scheme, we have also eliminated the need to use formal systems of dialogue to represent the questioning aspect

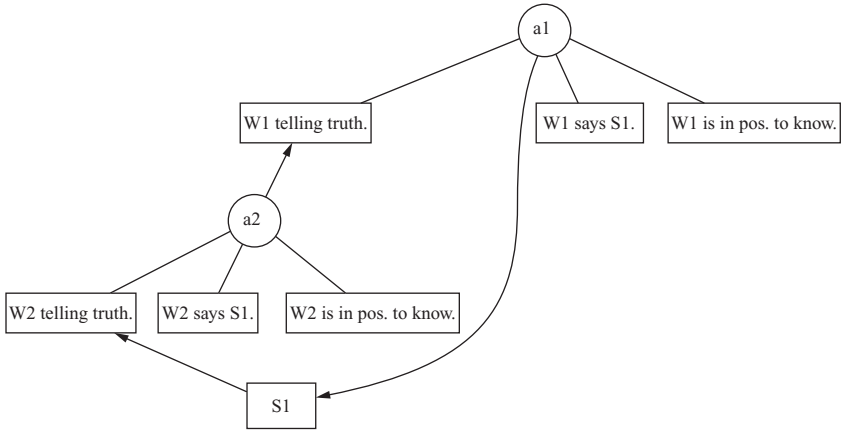


FIGURE 7.12. Third way of modeling corroborative witness testimony in Carneades.

of the evaluation of evidence in the case. However, it turns out that this is not so. For we need to recall that Carneades models the evidence in a case at trial as a sequence of argumentation partly defined by the issue in the case. Thus it is clear that we have not entirely eliminated the dialectical factor in evaluating argumentation from witness testimony as evidence. Still, we have been able to advance beyond the earlier approach by not only representing the argumentation scheme for argument from witness testimony on a diagram but also representing the critical questions matching the scheme.

Still, even this new method will not eliminate the need for seeing legal evidence as part of a dialogue system of analysis and evaluation. There are several reasons for this limitation of the system. One is that Carneades models evidence in a legal trial as relative to an issue that needs to be defined at the confrontation stage. Another is that there are different standards of evidence and burdens of proof that are set in different kinds of trials in law. For example, in a criminal trial, the standard set in place is one of proof beyond a reasonable doubt. In other kinds of trials, the standard may be one of the preponderance of evidence, or clear and convincing evidence (Farley and Freeman, 1996). How convincing or plausible an argument needs to be to prove the claim at issue, the ultimate *probandum* in the case, depends on the type of trial. Thus even though the method of diagramming can be more powerful when allied to the Carneades system, the system still needs to analyze and evaluate any given piece of evidence as part of the wider context of dialogue in a given case.

4. Asking of Questions in Examination Dialogue

How the peirastic method works can be illustrated by seeing how it can be used as a normative framework in which to evaluate the asking of questions

by an examiner in a trial. The major problem with previous attempts to apply logical structures of any sort to the asking of questions of the kind typically used in legal examinations is that the evaluation of a question asked in a given case does not exclusively depend on the logical structure of the question. Instead, the evaluation varies contextually. For example, the question "Where did you hide the murder weapon?" could be extremely objectionable in some cases if asked during the course of a trial. But the problem is that it would be inappropriate to condemn this question as fallacious in all cases. Suppose, for example, that the defendant had just admitted hiding the so-called murder weapon in the previous dialogue with the attorney examining him on the stand. Then if at the next question, the attorney says "Where did you hide the murder weapon?", this could be a legitimate question. Used in precisely that context, in the right place in the sequence of dialogue, the question should not be condemned as fallacious. Nor might it be ruled objectionable in a trial on the grounds that it is a leading question of the kind that should not be permitted. At any rate, it is clear that evaluating a question used in an examination depends on the context of how the question was asked in the dialogue in a specific case. What is fallacious or objectionable is not the question itself, but how it was used in the context of dialogue of a given case.

The new peirastic theory handles this kind of problem very well, because it evaluates the asking of a question in a particular case in relation to the dialogue that the question was supposedly a part of. First of all, what is important is to consider the type of dialogue the questioner and respondent are supposedly engaged in. If the question was asked in an examination of a witness in a trial, it can be evaluated from the point of view of the peirastic type of dialogue. In addition to this basic consideration, however, other contextual information needs to be taken into account. It is important to determine what prior questions were asked in the examination, and how these were answered in the sequence of dialogue.

According to Underwood and Fortune (1988), a common abuse of cross-examination is to use a question that implicitly contains a serious charge against the witness based only on innuendo and with no proof behind it. Loftus (1979) has also shown that the testimony of a witness can be shaped in subtle ways by the wording of the question. A number of so-called dirty tricks of cross examination have been shown by Kassin, Willams, and Saunders (1990) to rest on the use of presumptuous questions to carry out cross examination by innuendo. According to their empirical study, juror perceptions of a witness can be biased by the use of what they call presumptuous questions. They conclude (p. 382), "From a practical standpoint, this study suggests that the use of presumptuous questions is a dirty trick that can be used to distort jurors' evaluations of a witness's credibility." They conclude (p. 383) that the courts should intervene in some way to control the use of presumptuous leading questions. But the study of how such loaded

questions work is surely an important analytical tool in making such interventions possible. It was shown in Chapter 2, Section 2, how Rule 611 of the FRE allows the use of leading questions in cross-examination of a witness. As noted there, however, clause (a) of Rule 611 states that the court should “exercise reasonable control over the mode and order of interrogating witnesses”. The clause also states, as the reader will recall, that questioning should be “effective for the ascertainment of truth”. Such a rule leaves quite a bit open to judgment and flexibility in ruling on objections to leading questions.

Hathaway (1992) had the experience as a trial lawyer of often hearing objections such as ‘Objection – foundation’ or ‘Objection – compound question’ without being able to grasp the legal rationale of these objections. It was not obvious how they relate, if at all, to Rule 611. Moreover, although he saw that they also related somehow to the kind of objection suggested by the spouse abuse question, he could not remember any helpful list of objections to questions that could help him in the heat of a deposition or trial. To solve the problem, he put forward a list of the classic eight objections (p. 688). The following paraphrase illustrates each type of question and associates it with an objection placed behind it in parentheses.

1. You’ve never abused your spouse, have you? (Leading)
2. Will you tell me about all the times you’ve abused your spouse? (Narrative)
3. Have you ever abused your spouse? (Foundation)
4. Have you stopped abusing your spouse? (Misleading)
5. Do you argue with and abuse your spouse? (Compound)
6. Do you mistreat your spouse? (Ambiguous)
7. You can’t tell me you’ve never abused your spouse. (Argumentative)
8. Have you ever abused your spouse? (Asked and Answered)

Hathaway reported (p. 688) that he eventually learned that all these objections come from Rule 611. But none of them is explicitly stated in Rule 611. So the problem for a lawyer is twofold. One problem is simply to remember the list of objections. The other is to grasp the rationale behind each of them. These two problems are connected, because unless you understand the rationale of an objection, it will be hard to grasp when it should be used, how to use it properly, or even to remember it.

The list of the classic eight objections to forms of questioning is not only practically useful for lawyers. It is also very useful from a logical point of view of separating out one kind of questioning objection from others. And yet it is very hard to figure out exactly how the various objections are justified by, or stem from Rule 611. Rule 611 is very general. It only says, to recapitulate from Chapter 2, Section 2, that the mode and order of interrogating a witness should be effective for ascertainment of truth, should avoid needless consumption of time, and should protect witnesses from harassment. There

appears to be latitude to judge how each objection stems from one or more of these three rationales. Actually, all of the questions could be covered by all three rationales. All of the objections could be based on effectiveness of a question for ascertaining the truth. And all of them could involve some waste of time, if only because of the time needed to sort out the confusions and difficulties posed by the form of the question. Harassment is also a broad enough category so that all eight questions could possibly be fitted into that category as well. Thus much latitude is left by Rule 611 in how a judge should deal with specific problems or objections arising from leading questions. This way of dealing with leading questions, it can be argued, is as it should be. But it leaves open the problem of understanding how such judgments should be made on some sort of general rationale. The fact that they need to be made on a case-by-case basis does not undermine the possibility that they are based on some underlying method or principle.

4.1. *Profiles of Dialogue*

One analytical tool that is very valuable for evaluating the problematic questions in examination dialogues is the so-called profile of dialogue. As explained in Chapter 2, a profile of dialogue (Walton, 1989, p. 67) is an ordered sequence of moves (generally questions and replies) in a dialogue exchange between two parties, including an initial part, just prior to the designated move, and a subsequent part, just following the designated move. In evaluating a given case, the evidence needed is information about the prior sequence of questions in the dialogue. A *profile of dialogue* is an ordered sequence of questions and replies in a dialogue between two parties, representing a smaller, localized part of a larger dialogue. In a profile of dialogue, there is an initial part, just prior to the designated move, and a subsequent part, just following the designated move. The profile of dialogue represents the local context of a move – such as a question – by placing it in relation to the immediately adjacent moves in a context of dialogue. Krabbe (1992) has shown how the profile of dialogue is a useful tool for analysis and evaluation of argumentation, where giving a full formalized reconstruction of the whole dialogue would be too tedious and time-consuming. The profile is a more practical way of representing the local region of the dialectical structure of the context of a move in argumentation. For use in the analysis and evaluation of loaded and complex questions, the best technique – developed specifically in Walton (1989, pp. 67–70) to deal with the spouse abuse question – is the profile of dialogue. In a given case, whether asking the spouse abuse question should be judged to be fallacious or not depends on what prior questions were asked in the dialogue, and how those questions were answered. If the respondent has already admitted that he has a spouse and that he abused that spouse, asking the question is not fallacious. But if the respondent has never made such previous commitments in

the dialogue, asking the spouse abuse question could be a tricky tactic of entrapment. In such a case, asking the question could be called fallacious. In a case like that, the best reply may be to question the question. In either event, the tool best suited to providing the analysis of the argumentation in the case is the profile of dialogue.

Working up a profile of dialogue displays the form of the right sequence the questioning and replying should take in an examination dialogue. The profile can then be compared to the actual sequence, as known from the particulars of the given case being analyzed and evaluated. The technique works by displaying the localized context of a move – like the asking of a question – by situating it contextually in relation to the surrounding moves in a dialogue. Krabbe (1992) has shown how the profile of dialogue is a useful tool for analysis and evaluation argumentation, because giving a lengthy formal reconstruction of the dialogue as a whole would be too time-consuming.

The spouse abuse question “Have you stopped abusing your spouse?” was traditionally held to be fallacious on the grounds that it leaves the respondent no choice as a direct answer other than admitting to spousal abuse. But the same lesson applies here as with the murder weapon question considered above. For example, suppose that the respondent, in the given case, is the defendant in a trial, and he is being cross-examined by an attorney. Suppose he has admitted to the attorney in previous questioning during the examination that he does in fact have a spouse, and that he has abused that spouse at some time in the past. In that context, the examiner’s asking the spouse abuse question next could be perfectly reasonable. But in another kind of case, where the respondent has not admitted spouse abuse, the attorney’s asking him the very same spouse abuse question could be inappropriate. In this case, it would be justified to evaluate the asking of the question as fallacious. In a comparable way, a leading question could be allowed or struck down in a trial by judging it both in relation to legal rules such as Rule 611, and in relation to the prior sequence of questioning and other particulars of the dialogue in the given case.

4.2. Three Levels of Questioning

In the evaluation of any particular case, there are three levels to be considered. First, attention needs to be paid to the logical structure of the question itself. What kind of question is it? Is it a yes–no question, a why-question, a tag question, or some other identifiable type of question? The presuppositions of the question need to be identified. At this first level, the analysis concerns the structure of the question itself. But as shown above, the analysis of questions at this first level is not adequate for the purpose at hand. At a second level, the profile of dialogue needs to be taken into account. The problem here is to fit the asking of the question into its proper place in the sequence of questions and reply in the local region of the dialogue. At

this second level, the commitments of the respondent are a key factor. But to determine what commitments exist in a given case is a job that requires looking at a case contextually, to judge not only what has been explicitly stated, but also what has been suggested in the dialogue. Five ways in which a desired reply can be suggested by a leading question have been identified by Ogle et al. (1980, p. 43): (1) emphasis on certain words, (2) tone of the questioner, (3) nonverbal conduct of the questioner, (4) the questioner's inclusion of facts still in controversy, and (5) the question's form. Note that matters of tone and emphasis are included at this level. The third level is global. What needs to be determined at this level is what type of dialogue the asking of the question is supposed to be part of. Once the evidence from all three levels of analysis has been put together, an evaluation of the question (as asked in a specific case) can be carried out.

It is at this third level that the peirastic theory of examination dialogue is especially useful. Suppose that in a particular case, a judge has to decide whether a particular question asked by an attorney in examining a witness in a trial is objectionable or not – say on the grounds that it is improperly leading the witness. According to the peirastic theory, argumentation of the persuasive type that draws conclusions is not entirely inappropriate in all cases of examination dialogue. One reason is that legal examination dialogue can sometimes be of a peirastic or even exetastic sort, where critical probing of what the witness claims is appropriate. But balanced against this argumentative aspect of some questions that will be asked in a proper examination, there is an underlying need for examination dialogue to be information-seeking. The witness must be able to present what he saw, heard, or is otherwise in a position to know about, without this information being twisted or slanted to one side or another unduly by the nature of the question itself. Any question that tends too much toward foreclosing the ultimate issue is objectionable. Any question that does not permit the witness to say in his own terms what he saw, or what he knows about, by putting a particular slant on the question, should also be judged to be objectionable.

At this third level, there are two factors of context that need to be kept uppermost in mind in evaluating uses of leading questions. One factor is that the question can be leading because it fails to elicit the information in an open enough way so that the witness can recount the true facts of the case, as he recalls them. The problem here could be the use of, say, a tag question that directs the respondent to a particular reply at a juncture in the dialogue where it is vital that the respondent should not be so directed. The other factor is more specific. It is the factor of how the question leads toward the ultimate issue that is supposed to be decided in the case. The problem here is the intrusion of the lawyer's advocacy function into the examination dialogue. If the question has the effect of leading too much toward one side of the ultimate issue, then the problem is one of an improper dialectical

shift from the information-seeking type of dialogue to the persuasion type of dialogue.

A judge in a court will have to evaluate each case on its individual merits in the context of the given case. Each individual case is unique. That much is clear. But the peirastic theory gives a dialectical and contextual background, a normative model of what in general should be considered as appropriate in a dialogue. It provides a theoretical model of productive examination dialogue against which individual cases can be evaluated. There is a huge amount of empirical data of actual examples of cases, and rulings in particular cases. And different cases will be decided differently in different courts. But the peirastic theory gives a normative model that is useful for legal scholars to study and critically evaluate such rulings and cases.

5. Questioning Skills in Information-Seeking Dialogue

Among the most important skills for the questioner in information-seeking dialogue are learning what kind of question to ask, and learning how to follow up one question with another. What is required is to ask a sequence of questions in the right order, depending on the previous replies in the dialogue.

5.1. *Types of Questions and Replies*

A *direct answer* to a question gives exactly the information requested by the question. An *answer* gives the information, but not necessarily the exact information requested. A *reply* can be either an answer or some other appropriate locution such as “I don’t know.” The simplest kind of information-seeking question is the yes–no question (Harrah, 1984). A yes–no question puts forward a particular proposition for the respondent’s consideration and then asks whether that proposition is true or not true. The yes–no question is limited to two direct answers, and therefore it is often simplistic as an attempt to query a respondent. The next type of question to consider is the multiple-choice question. A multiple-choice question has a finite, usually small set of direct answers, and the respondent must choose exactly one from the set. Multiple-choice questions often involve more than just two choices of direct answers. But even a multiple-choice question that contains more than two possible direct answers may be simplistic. The respondent may want to reply, “None of the above” (Owen, 1985). Instead of such closed questions, a questioner may be better off to ask open questions, such as “What do you think about it?”

But as well as yes–no questions, there are other kinds of questions that can be used in information-seeking dialogue. Another type is the why-question. There are two basically different kinds of why-questions (Hamblin, 1970). One kind asks for an explanation of something, while the other kind asks

for a justification of something. The second type of why-question is a request for the respondent to produce an argument, based on premises that furnish evidence to support the proposition at issue. The answering of both these kinds of questions is an integral part of information-seeking dialogue. A simple kind of illustration would be a conversation in which a child asks a parent about sex. When giving advice on how to handle such a conversation, manuals usually begin by telling the parent to simply tell the child the basic facts. But doing this typically requires the offering of explanations as well. For example, the following advice is quoted from a Family Digest (anonymous) in *Reader's Digest* (November, 1998, p. 131):

Try to be approachable and sympathetic to your child's questions by taking time to explain as much as you can. Children do not expect their parents to be experts on sex, but they do want to know as much as possible. If you hesitate, refuse to tell your child something or cut a conversation short, you may leave him or her feeling confused or under the impression that sex is bad.

The dialogue in this kind of case can be classified as information-seeking. But it will not just consist in the answering of a series of yes–no questions. It also needs to involve explanations. It will also typically involve the use of arguments. For example, the parent may need to dispel a misconception about sex that the child has picked up from one of his peers. To respond in a helpful way, the parent may have to present an argument designed to dispel the misconception, or to criticize the view conveyed by the other child.

The respondent in an information-seeking dialogue should not just passively reply by giving direct answers to yes–no questions posed by the questioner. In many instances, the respondent may need to correct false or misleading presuppositions within the question itself. All questions have presuppositions (Belnap, 1969). A *presupposition*, according to one pragmatic definition (Walton, 1989), is any proposition the respondent automatically becomes committed to when he gives any direct answer to the question. To see the import of this definition, consider the classic spouse abuse question: “Have you stopped abusing your spouse?” This question is a yes–no question. The only two direct answers are ‘yes’ and ‘no’. But no matter which direct answer the respondent gives, he automatically becomes committed to the proposition that he has abused his spouse. But this proposition may not be true. Or at any rate, the respondent may not wish to have it placed into his set of commitments. That, presumably, is why the spouse abuse question is the classic illustration of the so-called fallacy of many questions.

5.2. *Leading Questions*

As noted in Chapter 6, Section 4.1, leading questions are a major concern in witness examination in law, because of suggestions built into the question that may bias the respondent, or prevent the respondent from giving the information based on his memory, or what he knows about the facts.

Ogle et al. (1980, p. 44) divide questions into search questions and choice questions. Search questions allow a witness a broad field of answers, while choice questions place limitations on answers. They distinguish several types of choice questions (p. 44), citing the following examples:

Standard yes–no question: Was the car red?

Negative yes–no question: Wasn't the car red?

Declaration question: The car was red(?)

Tag question: The car was red, wasn't it?

Alternative question: Was the car red, yellow, or blue?

The problem with all these forms of choice questions from a legal point of view is that each of them suggests a desired answer. Alternative questions are often presented as a way of avoiding the “leading question” challenge in law, according to Ogle et al. (p. 45), but legal scholars have cited specificity as a source of suggestion even in alternative questions. From a logical point of view, it can be pointed out that all five forms of question have presuppositions. And of course, presuppositions limit the respondent's scope for giving a direct answer to the question.

Of all the dialectical tools presented in Chapter 2, the most immediately useful for the analysis and evaluation of questions is the commitment set. According to the dialectical approach, each question must be analyzed and evaluated not only with respect to its form as a question, but also within the specific prior context of dialogue in which it was used. If a question has a presupposition or suggests a particular response, that, in itself, does not mean that the question is loaded, fallacious, inappropriate, or misleading. What matters is whether the presupposition of the question is already a commitment of the respondent at the point in the dialogue at which the question was asked. If the presupposition is a commitment that the respondent has already accepted at some earlier point in the dialogue, the question could be perfectly legitimate. But the very same question, with the same structure as a question, could be highly objectionable, even a leading or loaded question, if it contains as a presupposition some proposition that is controversial in the dialogue.

From the above remarks it can easily be appreciated that questions are frequently more than just innocent requests for information. Sometimes asking a question has an argumentative edge, because of the presuppositions built into the question. In such a case, a question is very much like an argument. In other cases, a question may ask not just for a discrete fact, but for a sequence of propositions in the form of an explanation. Explanations and arguments are normal parts of an information-seeking dialogue that make the dialogue an accurate and helpful for the conveying of information. What is needed are different kinds of questions and different kinds of replies, in a sequence in which the replies match the questions and move the dialogue forward toward the goal of exchange of information (Walton, 1989).

As well as why-questions and yes–no questions, there should also be how-questions, which, as noted above, ask for information on how to do something. As well as these closed questions, which limit the respondent to a fixed set of direct answers, there are also open questions, not tied to a predetermined set of direct answers. For example, an open question would be one such as “Describe the situation in your own words.” Closed questions are familiar to anyone who has taken a test or examination composed of multiple-choice questions (Owen, 1985). These various types of questions have already been catalogued and studied in the field known as erotetic logic – the logic of questions (Belnap, 1963; Aqvist, 1965; Harrah, 1984). But the major problem is not the classification of the different types of questions. The major problem is to figure out how they should be connected together in sequences in a logical manner.

Two factors need to be sorted out in dealing with the fallacy of many questions. One factor is that the question is complex, meaning that the question contains more than one proposition in its set of presuppositions. The other factor is that the question is loaded. The fallacy of many questions is committed when these two factors are combined in a single question. But in legal argumentation, loaded questions – called leading questions – are a particular concern. At the beginning, the clash between the information-giving purpose and the advocacy purpose of examination of a witness was noted. This tension is indicated in concerns about the use of leading questions. Some leading questions are objectionable in a trial. The basis of such objections is that a leading question may be too argumentative. The questioner is trying to ‘lead’ the respondent toward a particular answer. That is, the questioner is trying to get the respondent to draw a conclusion that can be used in a chain of inferences that move toward the ultimate thesis the questioner has the aim of proving in the trial. Not all leading questions are objectionable. But some leading questions should be objected to. The kind of leading question where the advocacy function overrides the information-seeking function too heavily should be struck down in a fair trial. And, of course, this sort of objection is frequently seen in trials. It is the way that the problem of loaded questions is contended with in the Anglo-American common law system.

These observations suggest a circumscribed level of tolerance in the doctrine of leading questions. A certain amount of advocacy in witness examination appears to be tolerable, and perhaps even unavoidable, but in other cases, the examiner will be judged to have stepped over a boundary. In such cases, asking a leading question is seen as trying to get the witness to draw an inference. But the primary function of the examination of a witness is to get the witness to present information to the court. The witness is not supposed to draw conclusions from this information, except in special instances. Unless it comes under one of these special headings of exclusion, the asking of a question that invites a witness to draw a significant conclusion is regarded

as too argumentative. What is revealed is that a certain amount of advocacy argument by the questioner is tolerable in the examination of a witness. But then sharp lines are drawn around the questioning to prevent this advocacy argumentation from getting out of hand, or being used inappropriately.

6. Questioning and Answering in the Interrogation

Given the harsher aspects of interrogation cited above, it would seem absurd to classify the type of question–reply dialogue found in witness examination in common law trials as being a species of interrogation. For the structural and argumentation rules of the interrogation, as outlined above, define a very different kind of dialogue than would be appropriate for examination of witnesses in a trial of the normal sort we are familiar with in Anglo-American law. However, there are some very definite similarities between the two types of dialogue. A witness can be made to answer a question in a trial, and if he can be shown to have lied, he can be found guilty of perjury. This sort of stick and carrot approach to questioning a witness is close to a kind of dialogue that would seem properly classifiable as interrogation. The similarity is underlined when one takes a more careful look at what types of questions are used in interrogations and at some of the limits drawn on them in order to make for more effective interrogation.

6.1. *Types of Questions in Interrogation Dialogue*

What types of questions are asked is very important to the success of an interrogation, and the order in which the questions are asked is also very important. Dillon (1990, pp. 85–91) classified several different types of questions typically used in interrogations.

1. *Opening questions.* At the start, no questions should be asked about the crime, and the purpose of questioning at this point is to “get the respondent talking” (p. 85). The opening question should be a yes–no question that is easy for the respondent to answer.
2. *Free narrative question.* With this type of question, the interrogator simply names a topic, and then asks the respondent to tell what he knows about it. An example (Dillon, 1990, p. 85) is the question “I understand you were present when the liquor was delivered, so would you please describe what happened?” The questioner should then listen to the reply without interrupting.
3. *Direct question.* A direct question follows up a narrative question by asking about a specific item. According to Dillon, the experience of interrogations has shown that it is best to avoid value-laden terms when asking direct questions. For example (p. 86), “An actual rapist will admit having sex with a woman but will deny raping her”. Or, “Tough guys fight somebody, not assault and batter them” (p. 86).

So the questioner should stick to language that directly describes the actions at issue, and not use value-laden language of a kind that imputes guilt. Since language in a criminal investigation will tend to be laden with ethical values, the questioner should make an effort to rephrase questions in a more direct way that removes these emotive connotations of the words.

4. *Cross-questioning.* In cross-questioning, a questioner checks and verifies one answer against another, probing the vague, evasive, or apparently contradictory answers (p. 89).
5. *Review questions.* These confirm previous answers, as in the question, "Is that correct?" or at the closing stage ask, "What else do you know?" (Dillon, 1990, p. 90).

It can be seen from this list that different kinds of questions are appropriate at different stages of the interrogation. Opening questions are obviously appropriate at the opening stage. Review questions are appropriate at the closing stage. At the closing stage, the questioner closes her notebook, and there will be small talk. Even at this stage, the interrogator is advised to be on the alert for clues that might be dropped by the respondent in the form of unguarded statements made in casual remarks. The respondent is also advised to be wary of letting such casual remarks drop in 'small talk', for a jury may take the remark in quite a different way, out of context – in a way that implies guilt or the committing of a crime. According to experimental results cited in Taylor (1984, p. 121), asking narrative questions generally resulted in fewer errors than asking direct questions requiring short replies, but the answers tended to be less complete.

A sixth type of question that can be added to the list is the either–or question, sometimes called a disjunctive question or a choice question. Such a question can distort a complex situation by forcing a dichotomy that does not leave room for qualifications or for other alternatives that are needed. Using such misleading questions is often unintentional, but in a police interrogation using them to try to force a suspect to confess is a favorite deceptive tactic. One of the leading techniques used in the Reid method is to pose alternative questions structured in such a way that no matter which alternative the suspect chooses, it implies guilt (Disclosure, 2003, p. 5).

6.2. *Loaded Questions*

As noted above, a participant in an interrogation needs to be aware of value-laden terms that occur in questions. All questions have presuppositions, and all questions posed in natural language will contain words and phrases that have emotive connotations, both positive and negative. The suggestiveness of a question can have subtle effects on the respondent who is a witness. What may occur is that the suggestive terms in the question can result in the interrogator's views being incorporated into the memory of the witness. A *loaded*

question as used in an interrogation is a question that contains presuppositions such that when the respondent gives any direct answer to the question he concedes certain assumptions that are at issue and that are damaging to his interests or the interests of someone whose actions he has witnessed. For example, the question “Where did you hide the gun?” presupposes that the respondent had a gun. If he gives a direct answer, citing any location, then he concedes that he possessed a gun. A complex question is one that combines several presuppositions, in effect, combining several questions in to one. The classic case of a question that is both complex and loaded is “Have you stopped abusing your spouse?” No matter which of the two direct answers the respondent gives, he concedes engaging in spousal abuse at some time or other. A leading question, as indicated in Chapter 2, Section 2, takes the respondent in a certain significant direction as soon as he gives a direct answer. As noted there, Rule 611 of the FRE excludes leading questions in the direct examination of a witness, subject to exceptions, but allows them on cross-examination. This cautious approach to leading questions in the evidence rules of Anglo-American law contrasts sharply with the normative rules regarding their use in interrogation dialogue. Leading questions are one of the main techniques of the interrogator. As noted above, questions in interrogation are often of the loaded type.

Leading questions can be legitimate in an interrogation, but they can have subtle effects that the interrogator or others might not be aware of and that can be highly misleading. Complex and loaded questions can be reasonable, provided they come in the right order of questioning in a dialogue sequence. For example, suppose that in an interrogation, the respondent just admitted that he had abused his spouse. Then asking the complex and loaded question “Have you stopped abusing your spouse?” could be quite appropriate. Fallacious questions tend to occur when there is an unawareness of the complex or loaded nature of a question, and misleading conclusions are drawn from the asking and answering of the question (Walton, 1995, pp. 202–5). Most questions of the kind asked in an interrogation are loaded, in one way or another, simply in virtue of the emotive connotations of the language used to ask the question. Psychologists have studied so-called response effects of question wording and shown that they are highly prevalent in the kinds of questions used in statistical polls and surveys (Schuman and Presser, 1981). What is vital is to understand is that every question tends to have a ‘spin’ on it, determined by its presuppositions and by the language used to pose the question.

There is an empirical method of determining how heavily a question is loaded in virtue of the language it contains. The method has two steps. The first step is to ask the question in a statistical poll and tabulate the results. The second step is to replace the term you think has an emotive spin on it with a descriptively equivalent but emotively neutral term and then ask the revised question in a poll with a group of respondents selected in the same way as

the first group. Schuman and Presser (1981) used this method extensively in determining response effects of question wording. An illustration of the technique is cited by Moore (1992, pp. 343–4). A 1985 survey asked respondents whether too little money was being spent on welfare. Nineteen percent of respondents said ‘yes’. But then when a group of respondents selected by the same criteria were asked the same question with the word ‘welfare’ replaced by the descriptively equivalent phrase ‘assistance to the poor’, sixty-three percent said ‘yes’. The difference of forty-four points is the so-called response effect of the wording in the question. Such a response effect can be used as an empirical means of judging to what extent a term used in a question is loaded.

Using loaded questions and other aggressive questioning tactics of the kind noted above are legitimate in an interrogation. But if they are pressed ahead too aggressively, the danger is that of getting a false confession. In an interrogation, it is better to move ahead persistently, but also patiently and methodically. Using complex questions with emotive question wording and tricky presumptions built into the question may just confuse the respondent, as well as others who have to try to make sense of the transcript later. Pressing ahead too hard to try to force a confession may subvert the goal of the interrogation by yielding information that turns out to be false or unreliable as evidence.

Thus leading questions are problematic in both interrogation dialogue and examination dialogue. But they are problematic in somewhat different ways and are tolerated to different degrees. Such differences suggest that examination dialogue, of the kind found in witness testimony in a trial, should be seen as quite different from interrogation dialogue in many key respects. However, there is also some legitimate overlap. It is significant, for example, that Rule 611 of the FRE, as shown in Chapter 2, Section 2, even uses the term ‘interrogation’, apparently using the word to stand for an examination of a type that that occurs in certain circumstances. The rule says that when a party calls a hostile witness, “interrogation may be by leading questions”. Clause (a) of Rule 611 also uses the phrase “the mode and order of interrogating witnesses”. Thus a large theoretical question is raised. Is examination of the kind conducted in a trial a species of interrogation, or are the two types of dialogue inherently different?

7. Uses of the New Peirastic Theory

The peirastic theory provides a normative model that can be used to evaluate moves made by the participants in any kind of examination dialogue. But specifically, one of its most central applications is to witness examination in a trial. The theory provides a normative framework that can be used to evaluate questions asked, replies given, and arguments advanced by either

party in such a dialogue. But why would anyone, from a practical point of view, find such a theory useful, other than as a model of rational argumentation that can be used to study traditional logical fallacies such as appeal to expert opinion? As shown above, the theory also provides an abstract normative model of how argumentation in a trial can be analyzed and evaluated as evidence. But so far, this model is so abstract that it is not obvious how it might be applied to real issues about how arguments should be put forward or evaluated in real courts with rules of procedure and forms of argumentation set by law in a given jurisdiction. Like any abstract theory, the peirastic theory could apply to reality in various ways. Procedural rules used in trials vary quite a bit, and are always subject to discussion and change. Kinds of evidence are regarded as important change, especially in view of scientific developments. What kinds of arguments are found to be most powerfully persuasive in trials also change over time. How can the peirastic theory be used to draw out practical implications in relation to such matters that would show how it is useful in relation to concerns in our justice system?

7.1. *Three Applications*

One of the most obvious uses would be to provide tactical advice to lawyers on how to conduct the examination of a witness in court. But here, at least initially, the theory does not seem to be applicable, for two reasons. One, already discussed in the objection considered above, is that from the lawyer's point of view, examination is not purely an information-seeking type of dialogue, but has strong elements of persuasion dialogue. It is a mixture and balance between the two types of dialogue. The other reason is that the lawyer is not necessarily interested in producing an examination dialogue that will move the trial forward toward its goal by eliciting as much relevant information as possible. The lawyer is interested in winning the case. She has the job of advocate. She wants tactical advice – rhetorical advice on how to persuade the trier to accept her argumentation on her side of the case. The peirastic model is not specifically tailored to provide this kind of advice, though it might be useful incidentally for this purpose. It is a normative theory that gives a model that can help in evaluating an argument as offering reasons to support a conclusion or as being a weak argument that is open to critical questioning. It is not a rhetorical theory that helps the advocate to craft an argument that will actually persuade a jury, even if that requires appealing to fallacious arguments that will prejudice the jury, leading it to arrive at a conclusion for the wrong reason. The peirastic theory takes a global, balanced, normative view of the fair trial as a whole process. Therefore, the peirastic model is not directly applicable to providing tactical advice to the lawyer. But there is a way that the peirastic model can be indirectly suited to this purpose, as will be explained further below, once other applications of the theory are

considered. Dialectical models of rational argumentation are in fact of interest to those studying rhetoric and speech communication, even though they are perhaps somewhat less directly applicable than the study of persuasive argumentation from a viewpoint of empirical psychology and belief modification.

A second possible application is to help judges and juries get a better grasp of examination dialogue and draw conclusions more carefully and critically from what they have heard in a witness examination dialogue in a trial. Here, the theory is more directly applicable. In particular, judges need to make decisions about which questions and replies should be considered relevant, about which questions should be classified as leading questions, and perhaps disallowed for that reason, and other procedural matters of this sort. There are many problems about rules of evidence and other procedure rules that govern examination dialogues in trials. The peirastic theory could be extremely useful in throwing some light on these controversies. The peirastic theory could provide new foundations for jurisprudence and introduce a systematic framework into that field which could be extremely useful. This application is possible because any justice system needs to be based on an underlying notion of rational argumentation as a means of both uncovering what really happened in a case and arriving fairly at a decision on what to do about it. If a theory can better bring out the structures of rational argumentation that legal evidence is based on, it will lead to better critical thinking skills by a trickle-down process by affecting the thinking of judges and lawyers. But this is an individual process. Are there more systematic ways the peirastic model might apply?

A third possible application goes beyond the specific uses of the theory by legal professionals such as lawyers and judges. The theory could provide a new basis for those both within and without the legal profession to take a fresh look at the trial as a legal institution and to re-evaluate the procedural rules used in trials. Legal logic in the past has been a narrow field, and many have been skeptical about how much use it is when applied to real legal argumentation and the very real problems that arise on a daily basis. It seems hard to deploy the notion of relevance, because the idea itself seems so obscure and hard to articulate, from a logical point of view. Relevance is central to the FRE and to the workability of the adversarial model of the trial in general, and thus many problems about how to apply the notion have arisen that are controversial in relation to rules of evidence. The new peirastic theory is directly applicable to these problems. What is relevant in a trial, according to the peirastic theory, is what contributes to the resolution of the conflict of opinions that is the issue in the trial. Information brought into the trial through the examination of witnesses, if it is necessary and useful for this purpose, is therefore relevant. Judgments of relevance, according to the peirastic theory, should be made by seeing the examination dialogue in a given case as peirastic and then evaluating whether the information

introduced by the peirastic exchange moves the trial forward, as a whole, toward its proper goal.

7.2. *Dealing with Unreliable Witness Testimony*

Related problems that the peirastic theory can throw much light on concern certain key types of argumentation that are so often used, and so often problematic, in examination of witnesses. One is the *ad hominem* argument used to impeach the credibility of a witness. Another is the appeal to expert opinion type of argument used in the examination of expert witnesses in trials. Another is the problem of how to deal with the various kinds of suggestive, tricky, and troublesome questions that may be used in examination of witnesses in court. Some complex and loaded questions of various sorts can be dealt with under the heading of leading questions. As already noted, many of these argumentative questioning tactics have in the past been studied in logic in the literature on fallacies. But of course, in legal argumentation, leading questions, if asked in the right context, can, in many cases, be reasonable moves in the argumentation in a case. The key problem now is to provide a new normative theory that will help us judge, in specific cases, whether a given question, when asked at some point in a specific sequence of questioning in a dialogue, should be criticized as being inappropriate or troublesome in some way that impedes the dialogue. The peirastic theory is precisely the sort of theory that is useful for this purpose.

There are three facts we know, from the cases examined in Chapter 1, about the unreliability of human witness testimony as a form of evidence. First, people often lie, for whatever reason. Second, people often have good reasons to lie. In legal cases, it is often in a person's interest to lie, or to conceal the truth. Third, memory is fallible and fades over time. Even if a person thinks he is telling the truth about a reported event, he may easily be mistaken. There are many cases of unjust conviction based mainly on the evidence of a witness who lied or was mistaken. Hence there is a problem in a legal system that allows a defendant to be convicted, or a case to be won or lost, based only on the testimony of a single witness. One person can all by himself, for whatever reason, drive a case forward to trial and convict an innocent person unfairly, and otherwise create untold misery and mischief using the legal system as a tool. Given these facts, it may seem wise not to have a policy of allowing a defendant to be convicted, or a case to be won or lost, based only on the testimony of a single witness.

In Anglo-American law, we do currently have such a policy. But what is the alternative to it? One alternative is to require that two independent witnesses should have to testify to the same claim before it can be admitted as evidence. One problem with this policy is that the poor evidence supplied by one unreliable witness becomes admissible as evidence when reinforced by the poor evidence supplied by another unreliable witness. Such evidence

then is unjustifiably included. It might be very easy for the police or others collecting evidence in a case to circumvent the restriction by turning up any kind of additional independent witness testimony, no matter how weak it is. Another problem with this policy is that evidence of a single very credible witness might be well supported by circumstantial evidence, such as forensic evidence, in a case. The two-witness rule would exclude such testimonial evidence. Yet if a witness were to be highly credible, and if her testimony fitted in with and was corroborated by the circumstantial evidence very well, it might seem unreasonable to exclude it. It would be throwing out the good evidence with the bad. Thus although this policy would be a way of overcoming the weakness of the current law, it might create other problems that are just as bad.

Another policy would be to admit the testimony of a single witness, even if it is not corroborated by the independent testimony of any other witness, if it is corroborated by other strong evidence in the case, such as circumstantial evidence. This policy might be better. It would at least narrow the possibilities for a single untruthful or mistaken witness to drive a case forward singlehandedly to an outcome such as unjust conviction.

It would seem to have been reasons such as these that led Baron Hume,⁴ one of the founders of Scots law, to lay it down as a principle “that no one should in any case be convicted on the testimony of a single witness” (Hume, *Crime*, Vol. II, p. 383). Hume argued, however, as quoted below (p. 384), that the testimony of two witnesses should not always be necessary to establish a fact in law:

It would not, however, be a reasonable thing, nor is it our law, that the want of a second witness to the fact cannot be supplied by the other circumstances of the case. If one man swear that he saw the pannel stab the deceased, and others confirm his testimony with circumstances such as the pannel’s sudden flight from the spot, the blood on his clothes, the bloody instrument found in his possession, his confession on being taken, or the like; certainly these are as good, nay better even, than a second testimony to the act of stabbing.

This proposal makes a lot of sense as a way of dealing with the kind of situation where a defendant is convicted only on the basis of a single witness. Given all cases of lying or mistaken witnesses, and the unjust convictions based on this kind of weak or false testimony cited in Chapter 1, Baron Hume’s proposal for the admissibility of witness testimony seems like a good step in the right direction.

But problems remain. As mentioned above, the experience of Scots law shows that just adding any other kind of evidence, even very weak or poor evidence, could often be an easy way to circumvent the intent of the policy, making it ineffective. Thus the problem is to rule on how strong the additional evidence needs to be in order to make the testimony of a

⁴ See Chapter 1, footnote 9.

single witness admissible. And there may also be the problem of how strong the original witness testimony needs to be. There is also room for variation here on what kinds of supporting evidence should be required, and how strong they need to be. Thus in trying to work with Baron Hume's proposal, we are cast back on the more general problem of how to evaluate evidence, and witness testimony evidence in particular.

8. Summary of the Theory

The most outstanding potential use of the peirastic theory of examination dialogue, in this early stage of its development, is in the analysis and evaluation of legal examination of witnesses from a broad viewpoint of critical thinking. This application is not just to give tactical advice to lawyers, and not just to solve legal problems of evidence and jurisprudence, although these are certainly both important uses of the theory. The most outstanding potential use is in the analysis and evaluation of examination dialogue from a broad and comprehensive viewpoint that includes nonlegal arguments as well as legal cases and that could be used to critically evaluate legal argumentation from a perspective broader than that of the interested legal professionals. According to the new peirastic theory, examination dialogue in law is best understood by seeing how it is essentially the same kind of dialogue as, or at least is based on, the kind of examination dialogue that we are all familiar with in everyday life and everyday conversational exchanges. That is precisely why a jury can follow a legal examination in court, understand what is going on, critically evaluate the conversation, and draw the right (or wrong) conclusions from it, using critical thinking.

8.1. *The Eight Steps in the Method*

The new theory of peirastic examination yields all the components needed to provide a method that can be used to evaluate any given case of the use of witness testimony in a trial. The method takes the form of a procedure with the following eight steps.

Step 1. Apply the argumentation scheme. If it is a case of nonexpert witness testimony, the argumentation scheme for appeal to testimony given in Chapter 1 needs to be applied. This step enables the identification of the argument as a specific type. It also makes possible recognition of the premises and conclusion of the argument. In order to fit the scheme, the premises of the given argument have to meet certain requirements. There has to be a witness, the witness has to be in a position to know about the event testified to, and so forth. The application of the scheme to the case also enables the trier to identify missing premises that need to be assumed in order to make the argument fit the requirements of the scheme. This step also helps with judgments of relevance. A premise can be identified as relevant, for example, if it was not explicitly stated, but is required to meet the requirements of the scheme.

Step 2. Consider closely related argumentation schemes. For example, suppose the appeal to witness testimony is the special type called appeal to expert opinion. Once it has been identified as belonging to that category, the argumentation scheme for the appeal to expert opinion has to be brought to bear.

Step 3. Go through the list of critical questions appropriate for that scheme and use them to peirastically probe into the weak points of the argument. If any critical question, once posed, is not answered satisfactorily, the appeal to testimony should be rejected. Here we get into a big question about argumentation schemes generally that has not been answered yet. Do the critical questions function in the same way as adding additional premises to the argument? In other words, are the critical questions the same as nonexplicit premises that need to be added to an argument? The problem is that some of the critical questions, for example, in the list corresponding to the appeal to expert opinion, do appear to have a burden of proof attached, while other do not. Future research on argumentation schemes will have to answer these questions, but fortunately we do not have to do so here. It is enough to be able to see that the critical questions are the beginning point of any peirastic evaluation of an appeal to witness testimony as an argument purporting to be evidence carrying probative weight in a trial.

Step 4. Once all the critical questions have been asked, a tentative evaluation of the appeal to witness testimony can be arrived at on the following basis. If all the critical questions have been answered satisfactorily in the dialogue, the appeal can be accepted as having probative weight as evidence. But that is not the end of the story. The dialogue can go on, in various directions. For example, suppose the witness is personally attacked as a liar, or as otherwise having a bad character for honesty, and this allegation is used as the basis of an *ad hominem* argument that attacks the appeal testimony by questioning the credibility of the witness. Here, the *ad hominem* argument has been used as a rebuttal or counterargument to the appeal to testimony argument. In a case such as this, you cannot just use the set of critical questions for the appeal to testimony argument. You have to go on to consider the whole chain of argumentation and examine where it goes. Here more than an argumentation scheme needs to be applied in order to properly evaluate the argumentation in the case.

Step 5. The next step is the amassing of the previous statements of the witness testifying into a story, or an account of what supposedly happened, as she saw it, and the probing into this story by the examiner. The questioning by the examiner can set up inferences that allow conclusions to be drawn by the trier. For example, such peirastic questioning can set up *ad hominem* arguments. Suppose, for example, the examiner brings out by questioning the witness a contradiction between what she says now and what she said

previously in her testimony, or committed herself to. The contradiction could be used as a circumstantial *ad hominem* argument by the examiner to show that the witness must be lying. This finding in turn might be used as a further argument to the conclusion that the witness lacks credibility. How this whole process of argumentation works has been set out in Chapter 3, using the theory of anchored narratives.

Step 6. When a witness is examined in a trial, the method is one of putting questions to the witness. Thus an important skill of examination is asking the right questions. The opposing counsel can object to the questions. Thus another skill involved is knowing how to object to a question. Finally there is the skill of judging a sequence of questions and replies to draw some conclusion on what has been shown by the sequence. This is a skill needed by the judge, who must rule on objections, and by the trier, who must decide on the outcome of the case. The methods that are helpful here are considered below in the section on objections and leading questions. However, the most general method applicable to evaluating evidence based on witness testimony in relation to these concerns is the method of profiles of dialogue. Each question has to be seen as part of a sequence of dialogue leading in a direction toward some conclusion. An individual question cannot be analyzed or evaluated in isolation from the dialogue it is part of. With loaded or leading questions, the question can only be evaluated properly by using the profile of dialogue technique to identify and analyze the presuppositions of the question.

Step 7. The other tool that may need to be used is the argument diagram. Using these tools you can get an idea where a chain of argumentation has led and how well it has stood up to refutation under critical scrutiny and attack by counterarguments. You have to consider the whole chain of argumentation to judge whether the original appeal to testimony that started it has held up to criticism or not.

Step 8. Once you have the profile of dialogue and possibly also the argument diagram representing the chain of argumentation that grew out of the appeal to testimony, this is the evidence you need to judge whether the argument is relevant or not. If it leads toward the ultimate *probandum* in the case at issue, or even arrives at it, then it is relevant. If it leads away from the ultimate probandum, or even to some other conclusion that is different from it, then it is irrelevant. These are global judgments. In some cases, the scheme for appeal to testimony is enough, by itself, to show that a given argument is relevant or not. But in many cases, relevance is a global judgment requiring the examination of a lengthy chain of argumentation in a dialogue.

Once the peirastic theory has been accepted in general outline as a working approach to witness testimony and examination, the problem is one of

how to apply the eight-step method to leading problems of evidence law that relate to examination as a working process in legal argumentation. Some additional advice is given in the remarks on statutory interpretation in Walton (2002). The interpretation of a statute is a task that is, to some extent, similar to that of analyzing and evaluating witness testimony in a trial, except that the framers of the statute are not there to be questioned by verbal examination. All that exists is the text and any remarks about its purpose and history. Still, the task of framing inferences from the wording and purpose of the statute can be viewed as a kind of examination dialogue. Miller (1990) has shown how many of the traditional maxims of statutory interpretation can be reformulated in a Gricean framework as conversational postulates. Using such pragmatic methods, both statutory interpretation and the evaluation witness testimony in a trial can be seen as processes that are very well modeled as types of examination dialogue of the peirastic kind.

Working out how the new peirastic theory of examination applies to such a wide range of problems is quite a large job that entails looking at many rules, cases, and existing legal doctrines. It is in fact much too large a job to have been finished in this chapter. The best we have been able to do is to pick several main problems of examination and evidence that are directly affected by the peirastic theory and try to show that the theory is useful in attacking these problems.

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