Introduction

Statutory interpretation is of crucial importance for legal practice and theory, political discussions, ethical issues, and public information. For instance, a substantial majority of the US Supreme Court's case load involves statutory interprertation, nearly two-thirds of its docket by one recent estimate, and in the years ahead, US courts will be asked to interpret the meaning of thousands of sections of legislation. As Katzmann (2014, 3–10) emphasized, the interpretation of legal texts affects not only daily rulings in the courts at all levels, but even political issues vital to the legal system such as televised confirmation hearings for US Supreme Court nominees. Statutes affect all aspects of our daily lives, including the most pressing public policy issues at a given time. However, although ideally the language of the statute should be clear, the texts passed by legislative bodies, such as the US Congress, can be vague, ambiguous, structurally complex in expression, or even apparently logically inconsistent. Fundamental values of our societies, emerging in the controversies on the issues of freedom of speech, abortion, marriage, or self-defense, are primarily debated as matters of interpretation. Interpretation in itself is problematic, even though it is the fundamental basis of the relationship between legal theory and legal practice. Law journals are filled with articles on how statute should be interpreted (Katzmann, 2014, 3–5); but, unlike chemists who pore over professional journals, judges normally do not have the time to read the law reviews, as their workload is often overwhelming (Easterbrook, 1990, 782; Baum, 2009, 12–14; Epstein, Landes, and Posner, 2013, 39–42). Dozens of canons of legal interpretation have been developed over the years (see for instance, Scalia and Garner, 2012), but their role, nature, and use are controversial (Sinclair, 2005; Llewellyn, 1949). Raging controversies have focused on the very nature of interpretation, namely on whether the courts should look only to the text, the wording of the statutes, or also to contextual matters. But such controversies have led to even deeper doubts and disagreements, such as what counts as a context (Easterbrook, 2017, 83–84).

In this territory of conflicting theories, two interrelated questions led us to developing the ideas that are presented in this book: What instruments can we offer to the

practitioners who have very little time to decide on individual cases, and justify their decisions? What insights can these instruments yield to laypeople who wish to comprehend the logic and the legal nature of these decisions, which can influence their lives and their choices,? The answer that we have arrived at and that we will try to defend through analyzing many legal cases, discussing and evaluating many theories, and addressing many theoretical challenges, comes down to one central point: the skill of using evidence-based arguments to both critically question and defend conclusions in an orderly way. These arguments are verbal means of using reasoning grounded on the facts of a case and the normative rules (norms) that define our lives as rational and social beings with respect for law (Walton, 1990). The use of arguments and the related skills of addressing, assessing, and integrating opposing viewpoints characterize not only our cognitive development but our use of reasoning skills to guide our way through our lives as social beings (Kuhn, Cheney, and Weinstock, 2000). We all need use arguments on a daily basis, as we all have doubts and different views that we need to justify.

An argumentative approach to statutory interpretation does not always result in an outcome showing how and why one side wins over the other side in the contest of argumentation. It is not meant to replace a judge or a human jury. But it can tell us a lot about how to interpret, identify, analyze, and evaluate the arguments on both sides, in some cases showing why one argument can be weighed against another and evaluated as stronger or weaker. In particular, in this book we use these argumentation tools to address the problem of interpretation. The question addressed is how to compare two or more competing interpretations and decide which one is better, based on the arguments and evidence in the given case. We see this kind of evaluation and explanation of interpretative argumentation as a practical task.

Easterbrook underscored that what is missing in the theories of interpretation is a simple instrument. "Rules of interpretation," he observed, "must reflect the resources available to the task," which implies "a relatively simple and mechanical approach to interpretation" (Easterbrook, 2017, 96). Our challenge in this book is to show how interpretation is an argumentative activity, one that aims at producing arguments that can be developed, understood, and assessed using simple tools that have been examined and classified during the whole history of dialectical argumentation since Aristotle's *Topics*. This implies regarding statutory interpretation under a different perspective and discovering a new order in the temple of legal theories and legal canons. Our goal is to "interpret" interpretation as resting on a limited number of types of arguments that anyone can find and recognize immediately in his or her own experience or discourse.

This aim, however, also implies justifying the presuppositions on which this argumentation approach is grounded, as applied to legal argumentation. This is why we needed to combine insights from different disciplines: legal theory, linguistics, argumentation, and artificial intelligence. Thus, we explain legal

disputes as a type of argumentative activity, in order to address them using argumentative tools. We show that statutory interpretation is essentially pragmatic, as pragmatic is the nature of arguments. We argue that interpretation is essentially a matter of arguments, and that arguments stem from a limited number of logic-semantic patterns (Hitchcock, 2017), which we call argumentation schemes (Walton, Reed, and Macagno, 2008). We show how these patterns can be assessed based on critical questions, and classified in dichotomies that allow choosing them for both production and analytical purposes (Macagno and Walton, 2015; Walton and Macagno, 2015). This is obviously an ambitious undertaking, but it was made possible by joining current resources of argumentation theory to the types of arguments recognized by MacCormack and Summers (1981) as those most prominently used to support or attack competing interpretations of statutes in legal practice.

The method built in this book combines theory and application. Chapter 1 summarizes the existing literature on legal interpretation, including commentaries on the canons of interpretation and other analytical tools used by lawyers to put forward arguments supporting and attacking controversial interpretations of legal documents, as well as the theories of interpretation put forward and widely discussed in law and philosophy of law. In Chapter 2, we introduce the relationship between statutory interpretation and argumentation theory, showing how the former can be conceived as a dialectical decision-making process. In Chapter 3, we use linguistic methods and approaches, especially those that have been developed in the field of pragmatics, to address central problems such as semantic and syntactic ambiguity. Chapter 4 addresses specific interpretative issues not widely taken into account in the traditional literature, such as those pertaining to definitions and implicit content, by building on leading theories from pragmatics and argumentation and using them to analyze legal cases. In Chapter 5, we develop and apply methods drawn from the literature in ancient dialectics and its modern developments in the field of argumentation for analyzing, evaluating, and finding arguments, including argumentation schemes and argument graphs, sometimes called argument maps or argument diagrams (originally deriving from Wigmore's evidential charts). These tools allow bringing to light the implicit components of interpretative arguments, and detecting possible weaknesses through the use of lists of critical questions. In Chapter 6, we rely heavily on recent work in artificial intelligence, especially formal and computational models of argumentation that have recently been developed, from whose applications to the domain of legal argumentation (within the field of AI and law) we draw extensively.

The purpose of this book is to provide a set of defeasible argumentation schemes that are applicable to the argumentation in legal cases where there are reasonable differences of opinion on the issue of how a statute should properly be interpreted. These schemes are intended to help computational systems of legal argumentation move forward in their quest to devise technologies that can be applied to the very common and fundamentally important legal problem of statutory interpretation.

Our approach to statutory interpretation combines five different disciplines, each providing a different perspective on legal argumentation: the contemporary field of argumentation theory, legal theory, pragmatics, dialectics and its modern developments, and AI & law.

0.1 AN ARGUMENTATIVE APPROACH TO INTERPRETATION

It is up to the politicians to make the rules of law by formulating and passing statutes and regulations. Judges and lawyers have the job of applying these statutes to cases that pose issues that need to be resolved in courtrooms or other legal settings. One might think that this task could be carried out by computational systems that are capable of logically reasoning from the facts of a case along with the applicable legal rules to automatically generate a conclusion on how to rule in that case. Just input the facts, let the program identify the relevant rules, let the system apply the relevant rules and determine whether the conditions of each rule are satisfied, and then explain the chain of reasoning to the user (Ashley, 2017, 1). This sort of approach is often called mechanical jurisprudence.

However, for several reasons, this approach turned out to be of limited use. One is that since statutes are expressed in natural language, the terms and sentences in them are typically vague and ambiguous. Moreover, the meanings of such natural language terms change over time as new situations, such as advances in science, extend and twist the meanings that can be attached to those terms. And as everyone knows, statutes and regulations are often written in technical legal language that is a formidable obstacle for the ordinary citizen to understand. Typically, as we well know, there are arguments in trials on both sides that turn on the issue of what some term, phrase, or sentence should properly or legally be taken to mean.

Another reason concerns the limitations of the traditional approaches to logic as applied to arguments in a courtroom setting, where there can be reasonable arguments on both sides even where there is agreement on the facts and the rules. Still another reason is that legal rules and regulations are typically open to exceptions. This means that legal reasoning, certainly in the common law system, is typically case-based reasoning of the kind requiring that exceptions to a rule be taken into account (Ashley, 2017, 1).

Traditional logic has not had much success in dealing with case-based reasoning of this kind. Deductive logic is based on universally quantified generalizations of the form "for all x"; it does not allow for exceptions to exclude the applicability of the rule, causing the argument based on this rule to be defeated.

Moreover, deductive logic does not enable us to cope with inconsistency very well. In deductive logic, if the premises are inconsistent with each other, any proposition at all is allowed to follow logically. Inductive reasoning (of the kind based on numerical probability values) is sometimes useful in law, such as in cases of expert testimony (e.g., in genetics). However, assigning precise numbers to facts and rules in order to

enable a numerical calculation to determine whether the conclusion follows or not by inductive reasoning (e.g., in non-expert witness testimony) has not generally been found useful for typical instances of legal rulings based on statutory interpretation of the kind we are interested in here. And applying inductive reasoning of this sort generally assumes that the evidential databases making up the premises are consistent. In typical cases of arguments about statutory interpretation, inconsistency is the norm, because in such cases there are reasonable arguments on both sides, so conflict within the body of evidence accepted as relevant is always present.

Most importantly, logic-based formalisms break down when applied to cases where much of the relevant evidence supporting the pro and con arguments on each side is based on conflicting rules and precedents (Berman and Hafner, 1988). To move forward in these sorts of cases the argumentation approach is needed, since it enables us to cope with conflicts of opinion. These conflicts are indeed the typical phenomena characterizing those cases in which statutory interpretation is the key problem.

Until recently, however, deductive logic had a decisive advantage over accounts of reasoning based on argumentation, namely, it could provide a precise, mathematical account of inferences and their validity. Only in recent years has argumentation has been able to catch up, thanks to the development of formal models of computational argumentation, building upon the results of research in nonmonotonic reasoning (for an account relating to the law, see Prakken and Sartor, 2015). Such systems are designed to solve problems that arise from applying rules that are subject to exceptions, so-called defeasible rules, to real cases that exhibit conflicts exposed by reasonable arguments on both sides. They are designed to work with forms of argument called defeasible argumentation schemes that enable reasoning from a set of premises to tentatively lead to a conclusion subject to the posing of critical questions that can shift the burden of proof back onto the proponent of the argument to provide further evidence.

This book fully endorses the argumentation approach, and indeed it expands, tests, and modifies the argumentation model of statutory interpretation developed in our prior work (Walton, Sartor, and Macagno, 2016; Macagno, Walton, and Sartor, 2018; Macagno and Walton, 2017; Walton, Sartor, and Macagno, 2018). This theoretical proposal can be considered as a normative dialectical model of interpretation. It is a model in the sense that it provides an abstract structure of interpretative arguments, focusing on the argumentation schemes being given in favor and against an attribution of meaning. It is normative in the sense that it aims to determine (and predict) how an argument can be defeated, countered, or weakened, and a tacit premise or conclusion can be retrieved and argued for or against. Finally, it is dialectical as it is designed to take contextual factors into account as part of the evidence to support or attack an interpretation, such as the purpose of the document, or the problem the authors or signers of the document were trying to solve.

The model proposed is abstract, in the sense that it is supposed to apply to the interpretative reasoning used in different legal systems. For this reason, the

challenge of this book lies in bringing to light the common "logical" skeleton that underlies different legal traditions and procedures, each characterized by its specific interpretative canons and rules. While most of the cases analyzed are common law cases of the kind that would be familiar to American legal practitioners (more specifically decisions of the Supreme Court of the United States in leading civil and criminal cases), we also provide some examples drawn from decisions passed by courts of different countries – such as the European Court of Justice, the Supreme Court of the United Kingdom, and the Court of Cassation of Italy. The legal reasoning behind statutory interpretation is thus regarded as transcending the narrower jurisdictional issues. This broader application of the theoretical framework makes the book applicable and readable on a worldwide basis.

The justification of our interpretations is based on patterns of reasoning that we use in everyday discussions. Interpretation is thus a matter of arguments, or rather argumentation, as it is concerned with how reasons supporting a hypothesis about the meaning of a statement are assessed and compared. This approach highlights a root common to pragmatics and legal theory, reducing the systems of canons and maxims peculiar to the two disciplines to the most generic patterns that describe the structure of arguments. This identification of a common mechanism has several advantages. First, it provides a systematic approach to the assessment of interpretative arguments. Critical questions can guide the evaluation of the reasons by pointing to the potential defeasibility aspects. Second, the representation of arguments as schemes characterized by specific semantic relations allows the reconstruction of unstated assumptions (Macagno, 2015; Macagno and Damele, 2013; van Eemeren and Grootendorst, 1992, Chapter 13; Walton, 2008). The explicit part of interpretative arguments is the tip of an iceberg; only by unveiling what the speakers take for granted in their reasoning is it possible to be aware of the sources of disagreement. Third, this argumentation-based approach makes it possible to reduce complex argumentative structures, characterized by many different interpretative canons, to simplified and schematic representations of conflicting arguments. This simplification reduces complex and long discussions and judgments to graphic summaries that can be more easily handled and understood. This argumentative model can in a certain sense be used for translating the complexity of the law into a language that can be understood by laypeople and for placing multiple reasons into a basic structure that can be better analyzed by practitioners.

0.2 THE LEGAL THEORY PERSPECTIVE

Our approach can be considered as the continuation of an ancient idea. If we go back to Cicero's *Topica*, we notice that this Latin lawyer was using what we now call argumentation to explain the reasoning used in legal cases. Cicero was indeed one of the first scholars to translate legal reasoning into instruments that can be taught and understood by laypeople. The argumentative view of legal interpretation has

characterized different theoretical accounts of legal discourse, from Perelman and Tarello (Perelman, 1979; Tarello, 1980) to many modern and contemporary works (MacCormick and Summers, 1991; Alexy, 1989; Dascal and Wróblewski, 1988; Scalia and Garner, 2012; Guastini, 2011). The basic idea behind these writings is that the first step toward building an evidence-based model of argumentation – namely, a way of weighing the evidential worth of one interpretation against another – is to identify certain characteristic forms of interpretative argument. The expectation is that this first step will lead to finding a general framework for approaching legal disputes that arise from a conflict of opinions on how a particular statement or proposal should properly be interpreted. Once an interpretative dispute is set in this framework, the way is paved to seeing how the argumentation technique of analyzing the arguments on both sides of an issue can be applied. Chapter 2 explains how in this procedure it is helpful to distinguish the different kinds of arguments typically involved in such disagreements of interpretation.

While legal interpretation is one of the most debated and investigated topics in legal theory, and the consideration of its pragmatic dimension has characterized some fundamental approaches to legal reasoning (see for instance Tarello, 1980), the advances in pragmatics are seldom taken into consideration by legal philosophers and practitioners. While legal practice is essentially argumentative, legal argumentation, despite its classical tradition is not comparable in influence with the other currents of legal philosophy. Moreover, while interpretation is essentially argumentative, and arguments are essentially instances of language use, argumentation and pragmatics are two separate and very little related fields. Even though there are notable exceptions and the interdisciplinary studies across these areas are growing, they remain isolated works or projects, and remain confined to the analysis of the relations between either pragmatics and law, or argumentation and law, or argumentation and pragmatics. The five-pronged interdisciplinary approach with which the problems of statutory interpretation are studied in this book using methods from argumentation theory, linguistics, and artificial intelligence has not been previously attempted or even envisaged.

0.3 THE PRAGMATICS PERSPECTIVE

First and primarily, when we speak of legal interpretation, we refer to the linguistic activity of reconstructing the intended meaning of a text or a portion thereof, namely sequences (or utterances) expressed in a specific co-text and context. Statutory interpretation, as referring to a specific type of text and human activity, falls essentially in the pragmatic domain. In contrast with semantics, in which meaning is defined only as a property of expressions in abstraction from particular situations, speakers, or hearers (Leech, 1983, 6), pragmatics is the study of meaning in relation to speech situations (or the use of language) (Huang, 2014, 2; Jaszczolt, 2018, 134). It

addresses the ways in which the linguistic context determines the proposition expressed by a given sentence in that context (Stalnaker, 1970, 287). As Kecskes put it (Kecskes, 2013, 21):

> Pragmatics is about meaning; it is about language use and the users. It is about how the language system is employed in social encounters by human beings. In this process, which is one of the most creative human enterprises, communicators (who are speaker-producers and hearer-interpreters at the same time) manipulate language to shape and infer meaning in a socio-cultural context. The main research questions for pragmatists are as follows: why do we choose to say what we say? (production), and why do we understand things the way we do? (comprehension).

Interpretation is not mere decoding; it is aimed at retrieving the meaning expressed by a specific statement in a specific context for a specific purpose, considering specific rules, presumptions, conditions, and roles. More specifically, statutory interpretation is about the interpretation of legal texts, which have unique institutional and linguistic characteristics.

For this reason, the second and essential dimension of our object of study is the analysis of the features that define this type of text and activity. While pragmatics commonly concerns how and why we comprehend or produce specific utterances in an ordinary – noninstitutional – setting, our object of study requires considering constraints that are not ordinary, such as the notion of legal system, the powers of the judicial activity, the purpose and the effects of legal statements, the procedures and the boundaries of legal disputes concerning the meaning of a text.

Resources from linguistics are used to address the interrelation between a contextualist approach to interpretation (Charnock, 2007) and the pragmatic (more specifically Gricean and neo-Gricean) accounts of meaning. Pragmatics addresses the relationship between the linguistic code (the linguistic means used in the interaction), the producers-interpreters of the code, and the context of the interaction (Kecskes, 2013). In the most general definition, pragmatics focuses "on how meaning is shaped and inferred during social interaction." In linguistic-philosophical pragmatics, the core of communication is the speaker's intention (meaning), as it is recognized and reconstructed through pragmatic inferences that are the focus of linguistic investigation (Kecskes, 2013; Capone, 2016). The discrepancy between sentential (semantic and syntactic) meaning and utterance meaning is bridged by pragmatic processes that involve enrichment (Butler, 2016; Carston, 2002).

In the law, the concept of "canon of interpretation" is often used for referring to specific justifications advanced to account for an interpretative decision. However, canons for legal interpretation are often used as labels to characterize empirically certain patterns of legal reasoning, without the support of an underlying analytical and linguistic theory. We offer such a theory, which builds on argumentation and a neo-Gricean approach to implicitness. Chapter 4 proposes a functional model of

legal interpretation, in which the focus of the analysis is placed on the actual or potential reasons (explicit or tacit) supporting or critically questioning an interpretation. This model investigates the implicit dimension of communication in terms of arguments, building on the idea of reasoning from the best interpretation. This account develops the canons of interpretation into precise technical instruments for representing the interpretative process. In this model, legal interpretation is conceived as a pragmatic process, aimed at establishing the meaning of statements in legal sources by taking into account what was specifically stated and what is implied by the context of use. The book provides an argumentation-based linguistic approach to legal interpretation that aims at explaining how interpretative choices can be justified, defended, and evaluated.

0.4 THE DIALECTICAL PERSPECTIVE

The dialectical dimension addresses what defines interpretation vis-à-vis comprehension, namely a disagreement concerning the meaning of a natural language text. Interpretation is not concerned with how we understand or produce texts, but with how we establish the acceptability of a specific reading thereof. Since our object of study addresses a disagreement and the verbal ways to solve it, it falls in the domain of argumentation. Arguments are a social and verbal means for contending with a difference – such as an unsolved problem or an unproven hypothesis – between two or more parties (Walton, 1990, 411). They are reasons advanced for leading the interlocutor to accept a position, or to overcome a doubt concerning a position. These reasons are not purely and only logical constructs, as they are based primarily on natural inferences that are used in patterns of defeasible reasoning. Argumentation – or more precisely dialectics in the medieval sense of the word – has been traditionally devoted to the analysis of the structure, nature, and classification of the *loci* or *maximae propositiones* on which we ground our arguments.

Dialectics is by definition a multifaceted discipline, the crossroad between logic, linguistics, and pragmatics that is necessary for analyzing our complex object. How can we provide a complete picture of statutory interpretation by selecting one or at maximum two of its essential, defining dimensions? How can we talk of interpretation while disregarding its argumentative nature, or of statutory interpretation while dismissing the fact that it is an inherently pragmatic phenomenon? The multidimensional analysis that this book endeavors to provide can offer a new perspective not only on the interpretation of specific legal texts, but on interpretation of texts in general. Our proposal is to conceive argumentation as the core of the process of establishing the best reading of a document. In this sense, the pragmatic and linguistic regularities, rules, and presumptions, and the legal norms, procedures, and assumptions developed in legal theory become parts and contents of an argumentative structure in which the crucial role is played by the methods used for assessing the strength of the arguments and the roots of the disagreements. Interpreting a text is thus matter of argumentation, namely reconstructing the reasoning,

the presuppositions, and the evidence provided in support of or against the reconstruction of the meaning of a statement to establish the less defeasible hypothesis.

This argumentative process is pragmatic. Meaning is regarded as the expression of a communicative intention, where "communicative" includes different types of human action, including the imposition of duties, prohibitions, and obligations. This intention can be retrieved primarily by the evidence provided, namely the language in a specific context. However, argumentation – or at least the approach to argumentation endorsed in this book – does not primarily address the problem of how utterances are comprehended, and why, but rather how their meaning is *reconstructed* for establishing whether a hypothesis about what they mean is acceptable. Argumentation starts from doubts and leads to defeasible conclusions through the assessment of reasons and evidence. The doubt in interpretation concerns the meaning of a statement or a part of text, and the goal is to reconstruct this meaning based on the elements available to the hearers or readers. Reconstruction is not the same as attribution of meaning or understanding. In interpretation, we justify why we reach a hypothesis; we make explicit the reasons that lead us to believe that an interpretative hypothesis is tentatively acceptable. These reasons may or may not mirror our psychological comprehension mechanisms; they are, however, unquestionable evidence of how we justify why we comprehend an utterance in a certain way.

The choice of a legal context, and more specifically the area of interpretation of statutes, has a specific purpose. Legal discourse and legal discussions about legal texts have some fundamental differences relative to other types of contexts and uses of language. First, in the law we have access to evidence concerning the reasons brought for or against a specific reconstruction of meaning. In this sense, legal discussions about statutory interpretation represent the clearest and most accessible corpus of interpretative disputes and arguments. Second, these discussions have a result that is justified considering the merits and the weaknesses of the contrary arguments. For this reason, judgments represent evidence of how the interpretative arguments are evaluated and ordered. Third, despite the legal reluctance to be involved in linguistic and pragmatic matters, these texts provide thorough reflections about how meaning is reconstructed, considering its context and its purpose. The study of statutory interpretation and legal interpretative discussions is not only a strategy for showing how an approach works; rather, it is a source for understanding how the broader phenomenon of interpretation can be conceived. Legal interpretation in a sense contributes to linguistic and pragmatic theories through its very practice.

0.5 THE AI AND LAW PERSPECTIVE

Computational models of legal argumentation have several advantages over previous models based on classical logic. First, the current computational models have the nonmonotonic property of allowing the inferences in a chain of argumentation

to be modified once new evidence comes in. Second, these computational models, like real legal argumentation in a trial, allow the conclusion of a defeasible argument to be acceptable based on premises that are accepted. In other words, the absolute truth or falsity of the propositions in an argument are not at issue. Rather, a standard of proof is set in place and for the argumentation of one side to be successful, it is only necessary for it to reach the required standard of proof. This means that arguments supporting or attacking a proposition can contradict or even defeat each other, but that is not the end of the game, as long as the mass of evidence-based argumentation on the one side meets its burden of proof, as defined by the standard of proof set at the opening stage of the procedure, and is therefore sufficient to defeat the mass of evidence-based argumentation on the other side. So, what capabilities does a computational model need to have to apply in a useful way to problems of statutory interpretation?

As Ashley (2017, 54) pointed out, to fit with the program of argumentation for statutory interpretation of MacCormack and Summers (1991), an interpretative system must be able to model case-based reasoning using rules, cases, underlying social values, and legislative purposes. There are several formal and computational systems that are capable of modeling acceptable defeasible argumentation. There are abstract argumentation models in which the concept of an argument is primitive and the basic notion used to evaluate argumentats is a graph structure in which some arguments attack and defeat other arguments. What seems to be a better fit, however, is a structured argumentation model in which the premises and conclusions of arguments are represented as nodes in a graph, configured in such a way that one argument can attack the premises of another argument, or its conclusion, or the argument itself.

As Ashley (2017, 129) showed in his survey of argumentation systems applicable to solving problems of statutory interpretation, there are a number of structured argumentation models that are suitable for evaluating legal argumentation. These models also have other interesting capabilities, such as the capability to find new arguments to support a claim by finding premises in an evidential database in a legal case. The step that needs to be taken, and that is already implicit in the account of interpretative argumentation of MacCormack and Summers (1991), is to see the traditional legal canons of interpretation as having the potential to represent different kinds of arguments pro and con a disputed interpretation. The next step required is to build this argumentation-based approach into a formal and computational model of structured argumentation. Ashley (2017, 129) considers the Carneades Argumentation System (Gordon, Prakken, and Walton, 2007) as a formal and implemented computational model that can be used to illustrate the useful features of computational models generally, because it can be presented in legally intuitive terms and it contains concepts useful for modeling legal argumentation such as proof standards and argumentation schemes. In this system, a proposition is acceptable if, given the pro and con arguments up to that stage and a given case, the conclusion can

be determined to be acceptable given the arguments modeled by the system up to that stage, along with some assumptions that can be provisionally determined by the user.

A brief word of clarification here may be helpful to the general reader on the question of how to interpret the argument diagrams representing the argumentation in the cases analyzed throughout the book. We want to make it clear from the beginning that we are doing our best to explain how the models and tools described and applied in the book can be applied specifically to the problem of how statutes drafted by politicians rather than by professionals in the legal system, such as lawyers and judges, have to be interpreted, analyzed, and evaluated as part of the process of evaluating evidence in the courts.

We have proceeded in this fashion in order to make things as simple as possible for readers who have a law background, or other disciplinary background, but who at this point have no acquaintance with any of the formal models or computational tools that are currently being used in artificial intelligence and law, a somewhat specialized area of research. We have used what we hope to be a simple and easily understandable generic system of drawing argument diagrams that does not require the user to be familiar with any specific computational model or diagramming tool. The reader should feel quite free to use her or his favorite editor to create these diagrams and explain them to his or her students or colleagues. We hope these diagrams will help explain to the readers the potential of the argumentation methodology that can help with problems of statutory interpretation.

The core of our method is to visualize the argumentation that can be used by both sides to support or attack any interpretation proposed of a problematically written statute (such as one containing a semantic or syntactic ambiguity) by means of drawing an argument diagram, or argument map as it is usually called in computing, for any legal case where statutory interpretation is a problem. We are well aware that in using the structured and formalistic argumentation approach there is the danger of confusing readers more than explaining to them how the courts can do a better job of grappling with the hard (so-called wicked) problems of statutory interpretation. The methods that we advocate include the application of argumentation schemes, argument diagrams, and other such tools to model the reasons pro and con a particular interpretation of a statute, or indeed of any other legal document where interpretation of natural language text is required. Don't worry if you are a legal practitioner, a judge, or anyone at all, who is not familiar with the state-of-the-art argumentation tools currently being used in artificial intelligence. We try our best to explain everything from the ground up.

Though we drew our diagrams using yEd, a graph editor, many of the examples in the book have been visually represented after the fashion of the Carneades Argumentation System, a computational tool, with the ultimate conclusion of the chain of argumentation shown at the left and the various premises and conclusions in that chain indicated as propositions flowing from the evidence in the case to the ultimate conclusion. (We followed the conventions of Carneades version 2; a more

advanced version, version 4, has argumentation schemes hardwired into the system.) This way of visually representing these argument diagrams is a little different from the way some readers may be familiar with, a way that presents the ultimate conclusion at the top of the diagram and all the evidence represented as a chain of argumentation flowing upward and culminating in that final conclusion. Don't worry about this. The graph can be presented either way, and one style of graph can automatically be drawn the other way using yEd or any of the many other software tools available for drawing, analyzing, and evaluating argumentation by building an argument diagram of this sort.

Many of the diagrams used in the book have different purposes. For example, some of them are used to draw graphs classifying the different types of arguments used for statutory interpretation. The purpose of this book is to model argumentation schemes representing the different kinds of arguments that can be used pro or con a particular interpretation that is being proposed. In other words, to put it very simply, the purpose of the book is to recast the traditional canons of interpretation as to forms of distinctive and identifiable forms of argument that can be defined clearly and precisely. This is another instance where the use of a graph structure presented visually as a diagram is extremely helpful for summarizing and explaining the results we arrived at by analyzing the many different examples of problematic statutory interpretation scattered throughout the book.

0.6 THE WAY FORWARD

An argumentative approach to statutory interpretation is a risk. Analyzing a phenomenon by combining two perspectives is already a challenge, as it necessarily implies a distortion of two ways of looking at a state of affairs. The pragmatics used in legal theories about interpretation is an adaptation of pragmatic theories, applied to legal theory through an argumentation viewpoint. The advantage that this multidimensional and multidisciplinary approach offers is that by furnishing practical tools to aid with the procedure of reasonable interpretation of a text purporting to represent a justifiable interpretation of the statute, the argumentation on both sides can be made explicit and represented visually in a graph structure, an argument map, that displays the whole network of argumentation in a case. To take the first steps toward accomplishing the objective of producing this argument technology, we are going first to adapt the theories of legal interpretation to fit a pragmatic perspective, and then use pragmatic theories to extend our argumentation-based approach. This effort, however, does not replace what already exists. Instead, its goal is to show how the complexity of legal canons and legal theories can be regarded and read using the instruments that we already use in everyday conversation, namely our arguments. The awareness of the reasons that we use when we interpret our language is the same awareness of the

patterns that courts and legal practitioners use in supporting an interpretative hypothesis or establishing its acceptability.

We hope that the theory we have put forward in this book is groundbreaking, at least for its effort to outline a truly interdisciplinary view of our research object. Given the scale and the depth of the problem as indicated by the remarks of Katzmann (2014) cited above, we realize that we can hardly claim to have resolved the many conflicts about statutory interpretation. However, we can reasonably claim to have set out a tentative but promising direction that applies these new tools and resources from allied fields to address our questions with some promising measure of success. We are hoping, at any rate, that our efforts will suggest a new path of research that others can take as a useful step, a way forward amidst the ongoing legal problems and controversies posed by statutory interpretation.

REFERENCES

Alexy, Robert. 1989. *A Theory of Legal Argumentation: The Theory of Rational Discourse as Theory of Legal Justification*. Edited by Neil McCormick and Ruth Adler. Oxford, UK: Clarendon Press.

Aristotle. 1991. "Topics." In *The Complete Works of Aristotle, Vol. I*, edited by Jonathan Barnes. Princeton, NJ: Princeton University Press.

Ashley, Kevin. 2017. *Artificial Intelligence and Legal Analytics*. New York, NY: Cambridge University Press.

Baum, Lawrence. 2009. *Judges and Their Audiences: A Perspective on Judicial Behavior*. Princeton, NJ: Princeton University Press.

Berman, Donald, and Carole Hafner. 1988. "Obstacles to the development of logic-based models of legal reasoning." In *Computer Power and Legal Language*, edited by Charles Walter, 185–214. Westport, CT: Greenwood Press.

Butler, Brian. 2016. "Law and the primacy of pragmatics." In *Pragmatics and Law: Philosophical Perspectives*, edited by Alessandro Capone and Francesca Poggi, 1–13. Cham, Switzerland: Springer.

Capone, Alessandro. 2016. "The role of pragmatics in (re)constructing the rational law-maker." In *Pragmatics & Cognition*, edited by Alessandro Capone and Francesca Poggi, 21:141–157. Cham, Switzerland: Springer.

Carston, Robyn. 2002. *Thoughts and Utterances: The Pragmatics of Explicit Communication*. Oxford, UK: Blackwell Publishing Ltd.

Charnock, Ross. 2007. "Lexical indeterminacy: Contextualism and rule-following in Common Law adjudication." In *Interpretation, Law and the Construction of Meaning: Collected Papers on Legal Interpretation in Theory, Adjudication and Political Practice*, edited by Anne Wagner, Wouter Werner, and Deborah Cao, 21–47. Amsterdam, Netherlands: Springer.

Cicero, Marcus Tullius. 2003. *Topica*. Edited by Tobias Reinhardt. Oxford, UK: Oxford University Press.

Dascal, Marcelo, and Jerzy Wróblewski. 1988. "Transparency and doubt: Understanding and interpretation in pragmatics and in law." *Law and Philosophy* 7(2): 203–224. https://doi.org/10.1007/BF00144156.

Easterbrook, Frank. 1990. "What's so special about judges?" *University of Colorado Law Review* 61: 773–782.
Easterbrook, Frank. 2017. "The absence of method in statutory interpretation." *University of Chicago Law Review* 84(1): 81–97.
Eemeren, Frans van, and Rob Grootendorst. 1992. *Argumentation, Communication, and Fallacies: A Pragma-Dialectical Perspective*. Hillsdale, NJ: Lawrence Erlbaum Associates.
Epstein, Lee, William Landes, and Richard Posner. 2013. *The Behavior of Federal Judges: A Theoretical and Empirical Study of Rational Choice*. Cambridge, MA: Harvard University Press.
Gordon, Thomas, Henry Prakken, and Douglas Walton. 2007. "The Carneades model of argument and burden of proof." *Artificial Intelligence* 171(10–15): 875–896. https://doi.org/10.1016/j.artint.2007.04.010.
Guastini, Riccardo. 2011. *Interpretare e Argomentare*. Milano, Italy: Giuffrè.
Hitchcock, David. 2017. *On Reasoning and Argument: Essays in Informal Logic and on Critical Thinking*. Cham, Switzerland: Springer.
Huang, Yan. 2014. *Pragmatics*. Oxford, UK: Oxford University Press.
Jaszczolt, Kasia. 2018. "Pragmatics and philosophy: In search of a paradigm." *Intercultural Pragmatics* 15(2): 131–159. https://doi.org/10.1515/ip-2018-0002.
Katzmann, Robert. 2014. *Judging Statutes*. New York, NY: Oxford University Press.
Kecskes, Istvan. 2013. *Intercultural Pragmatics*. Oxford, UK: Oxford University Press.
Kuhn, Deanna, Richard Cheney, and Michael Weinstock. 2000. "The development of epistemological understanding." *Cognitive Development* 15(3): 309–328. https://doi.org/10.1016/S0885-2014(00)00030-7
Leech, Geoffrey. 1983. *Principles of Pragmatics*. London, UK: Longman.
Llewellyn, Karl. 1949. "Remarks on the theory of appellate decision and the rules or Canons about how statutes are to be construed." *Vanderbilt Law Review* 3: 395–406.
Macagno, Fabrizio. 2015. "Presupposition as argumentative reasoning." In *Interdisciplinary Studies in Pragmatics, Culture and Society*, edited by Alessandro Capone and Jacob Mey, 465–487. Cham, Switzerland: Springer.
Macagno, Fabrizio, and Giovanni Damele. 2013. "The dialogical force of implicit premises. Presumptions in enthymemes." *Informal Logic* 33(3): 361. https://doi.org/10.22329/il.v33i3.3679.
Macagno, Fabrizio, and Douglas Walton. 2015. "Classifying the patterns of natural arguments." *Philosophy and Rhetoric* 48(1): 26–53. https://doi.org/10.1353/par.2015.0005.
Macagno, Fabrizio, and Douglas Walton. 2017. "Arguments of statutory interpretation and argumentation schemes." *International Journal of Legal Discourse* 2(1): 47–83. https://doi.org/10.1515/ijld-2017-0002.
Macagno, Fabrizio, Douglas Walton, and Giovanni Sartor. 2018. "Pragmatic maxims and presumptions in legal interpretation." *Law and Philosophy* 37(1): 69–115. https://doi.org/10.1007/s10982-017-9306-4.
MacCormick, Neil, and Robert Summers, eds. 1991. *Interpreting Statutes: A Comparative Study*. Aldershot, UK: Dartmouth.
Perelman, Chaïm. 1979. *Logique Juridique. Nouvelle Réthorique*. Paris, France: Dalloz.
Scalia, Antonin, and Bryan Garner. 2012. *Reading Law: The Interpretation of Legal Texts*. Eagan, MN: Thomson West.
Sinclair, Michael. 2005. "Only a sith thinks like that: Llewellyn's dueling canons, one to seven." *New York Law School Law Review* 50: 919–992.
Stalnaker, Robert. 1970. "Pragmatics." *Synthese* 22(1–2): 272–289. https://doi.org/10.1007/BF00413603.

Tarello, Giovanni. 1980. *L'interpretazione della Legge*. Milano, Italy: Giuffrè.
Walton, Douglas. 1990. "What is reasoning? What is an argument?" *Journal of Philosophy* 87: 399–419. https://doi.org/10.2307/2026735.
Walton, Douglas. 2008. "The three bases for the enthymeme: A dialogical theory." *Journal of Applied Logic* 6(3): 361–79. https://doi.org/10.1016/j.jal.2007.06.002
Walton, Douglas, and Fabrizio Macagno. 2015. "A classification system for argumentation schemes." *Argument and Computation* 6(3): 219–245. https://doi.org/10.1080/19462166.2015.1123772.
Walton, Douglas, Christopher Reed, and Fabrizio Macagno. 2008. *Argumentation Schemes*. New York; NY: Cambridge University Press.
Walton, Douglas, Giovanni Sartor, and Fabrizio Macagno. 2016. "An argumentation framework for contested cases of statutory interpretation." *Artificial Intelligence and Law* 24(1): 51–91. https://doi.org/10.1007/s10506-016-9179-0.
Walton, Douglas, Giovanni Sartor, and Fabrizio Macagno. 2018. "Statutory interpretation as argumentation." In *Handbook of Legal Reasoning and Argumentation*, edited by Giorgio Bongiovanni, Gerald Postema, Antonino Rotolo, Chiara Valentini, Giovanni Sartor, and Douglas Walton, 519–560. Dordrecht, Netherlands: Springer.