

VICTOR NÓBREGA LUCCAS

**ARGUMENTATION MAPS OF JUDICIAL DECISIONS: BUILDING
A MODEL**

Tese de Doutorado

Orientador: Prof. Dr. Juliano Souza de Albuquerque Maranhão

UNIVERSIDADE DE SÃO PAULO

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VICTOR NÓBREGA LUCCAS

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Tese apresentada à Banca Examinadora do Programa de Pós-Graduação em Direito, da Faculdade de Direito da Universidade de São Paulo, como exigência parcial para obtenção do título de Doutor em Direito, na área de concentração em Filosofia do Direito, sob a orientação do Prof. Dr. Juliano Souza de Albuquerque Maranhão.

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Nihil tam absurdum, quod non dictum sit ab aliquo philosophorum.
(There is nothing so absurd that some philosopher has not already said it.)
(Nada se pode dizer de tão absurdo que já não tenha sido dito por algum filósofo)

Marcos Tullius Cicero

*To my parents and grandparents, in life or in memoriam.
Aos meus pais e avós, em vida ou em sua memória.*

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Not only is the Law made of rules and precedents, but acknowledgments too. I would risk to say that the penalties must be harsher than those which the Law destines to the most heinous crimes, for few are so adventurous as to break them. I am certainly not one of those indomitable spirits. Therefore, I abide by the two fundamental rules of acknowledgements, widely applied in precedents.

The first rule is to acknowledge that the PhD dissertation is not one's own work. It could not have been done without the teachings and support of many: colleagues, friends and family. On the other hand, the same rule states that one must assume full responsibility for all the work's flaws, which are certainly many.

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ABSTRACT

NÓBREGA LUCCAS, Victor. **Argumentation Maps of Judicial Decisions: Building a Model. 2017.** 379p. PhD Dissertation (Philosophy of Law) – Faculdade de Direito, Universidade de São Paulo, São Paulo, 2017.

This dissertation contributes to answering the question of how to decide which legal argument is stronger by advancing an in-depth study of proportionality analysis, grounded in an argument scheme approach to investigate rules of legal argumentation. Such an approach is based on the combination of tools of argumentation theory (not only argument schemes, in spite of the name) with accounts of legal theory, and their application to real, preferably hard, cases. Such a methodology leads to the creation of argumentation maps that represent the reasoning of judicial decisions as an argumentative dialogue. This work starts by presenting the basic elements of a model of argumentation: a knowledge base, inference structures, preferred extensions (related to attacks and burdens of proof), and a dialogue protocol containing rules of argumentation, including procedural rules and those related to all other elements. Then, it provides a detailed analysis of the concepts of rules of inference, attacks and burdens of proof, in order to define argument schemes. A methodology to the investigation of argument schemes is detailed and conventions on argument maps are established. Arguments related to the application of legal norms and use of precedents are briefly discussed. Proportionality analysis is presented based on Robert Alexy's theoretical account, and explained in contrast to a wider background of teleological reasoning and judicial review. Argument schemes for proportionality analysis are developed. An argument map is built by applying the aforementioned argument schemes to the case of S.A.S. x France (Application 43835/2011, decision 1st July 2014), adjudicated by the European Court of Human Rights. Based on the case discussion, the argument schemes are reviewed and a refined model of proportionality analysis is presented.

Keywords: Legal argumentation, argument scheme, proportionality analysis, teleological reasoning, judicial review, artificial intelligence and law.

RESUMO

NÓBREGA LUCCAS, Victor. **Mapas Argumentativos de Decisões Judiciais: Problematização e Desenvolvimento de um Modelo.** 2017. 379p. Tese de Doutorado – Faculdade de Direito, Universidade de São Paulo, São Paulo, 2017.

Esta tese contribui para responder à questão de como decidir qual argumento jurídico é mais forte, por intermédio de um estudo aprofundado da análise de proporcionalidade, fundamentado em uma abordagem de esquemas de argumentos, usada para investigar as regras de argumentação jurídica. Essa abordagem baseia-se na combinação de ferramentas da teoria da argumentação (não apenas esquemas de argumentos, apesar da denominação) com modelos oriundos da teoria jurídica, e sua aplicação a casos reais, preferencialmente casos controversos. Essa metodologia leva à criação de mapas argumentativos, que representam o raciocínio das decisões judiciais como um diálogo argumentativo. Este trabalho apresenta os elementos básicos de um modelo de argumentação: uma base de conhecimento, estruturas de inferência, extensões preferidas (relacionadas a ataques e a ônus da prova) e um protocolo de diálogo contendo regras de argumentação, incluindo regras procedimentais e aquelas relacionadas a todos os outros elementos. Em seguida, fornece uma análise detalhada dos conceitos de regras de inferência, ataques e ônus de prova, para então definir esquemas de argumento. Uma metodologia para a pesquisa esquemas de argumentos é delineada, e as convenções sobre mapas argumentativos são estabelecidas. Argumentos relacionados à aplicação de normas jurídicas e ao uso de precedentes são brevemente discutidos. A análise de proporcionalidade é apresentada com base no modelo teórico de Robert Alexy, e explicada em contraste com o contexto mais amplo do raciocínio teleológico e da revisão judicial. São desenvolvidos esquemas de argumentos para análise de proporcionalidade. Um mapa argumentativo é construído aplicando os esquemas de argumento acima mencionados ao caso de S.A.S. x França (Pedido 43835/2011, decisão de 1º de julho de 2014), julgado pelo Tribunal Europeu dos Direitos do Homem. Com base na discussão de caso, os esquemas de argumentos são revisados, e um modelo refinado de análise de proporcionalidade é apresentado.

Palavras-chave: argumentação jurídica, esquema de argumento, análise de proporcionalidade, raciocínio teleológico, revisão judicial, inteligência artificial e direito.

RÉSUMÉ

NÓBREGA LUCCAS, Victor. **Cartes d'arguments des décisions judiciaires: construction d'un modèle. 2016.** 379p. Doctorat – Faculdade de Direito, Universidade de São Paulo, São Paulo, 2017.

Cette thèse contribue pour répondre la question de savoir comment décider quel argument juridique est plus forte, grâce à une étude minutieux de l'analyse de la proportionnalité, basée sur une approche de schémas d'arguments, pour investiguer les règles de l'argumentation juridique. Cette approche est basée sur la combinaison d' outils de la théorie d'argumentation (pas seulement des schémas d'arguments, malgré la dénomination) avec des rapports de la théorie juridique et son application aux cas réels, préférablement des cas controversés. Cette méthodologie conduit à la création de cartes d'arguments, qui représentent le raisonnement des décisions judiciaires comme un dialogue argumentatif. La thèse présente les éléments basic d'un modèle d'argumentation: une base de connaissance, des structures d'inférence, extensions préférées (liées aux attaques et à la charge de la preuve) et un protocole de dialogue contenant des règles d'arguments, inclus les règles procédurales et celles liés à tous les autres éléments. En suite, l'étude propose une analyse détaillée des concepts de règles d'inférence, d'attaques et de charge de la preuve, pour définir des schémas d'arguments. Une méthodologie pour la recherche des schémas d'arguments est décrite, et les conventions à propôs des cartes d'arguments sont établis. Arguments liés à l'application des lois et à l'utilisation des précédents sont succinctement discutées. L'analyse de la proportionnalité est présenté sur la base du cadre théorique de Robert Alexy, et est expliqué en contraste avec le contexte plus ample du raisonnement téléologique et de contrôle judiciaire. Quelques plans d'arguments sont développés pour l'analyse de la proportionnalité. Une carte d'argument est construit en appliquant les schémas d'arguments mentionnés dans le cas de S.A.S. x France (Application 43835/2011, décision du 1er Juillet 2014), jugée par la Cour Européenne des Droits de L'homme. Basé sur la discussion de cas, les schémas d'arguments sont examinés, et un modèle raffiné de l'analyse de la proportionnalité est présenté.

Mots-clés: argumentation juridique, schéma d'argument, analyse de proportionnalité, raisonnement téléologique, contrôle judiciaire, intelligence artificielle et droit.

SUMMARY

<u>Introduction. The Quest for the Right Answer</u>	17
1. Object of Investigation	17
2. A Technical-Contextual Approach to Legal Argumentation	21
3. Structure of the Work	29
4. Presentation Style	30
<u>Chapter I. Basic Elements of a Model for Legal Argumentation</u>	33
I.1 Two Perspectives on the Right Answer	35
I.2 Basic Elements of an Argumentation Model	38
I.2.A Static Analysis: Knowledge Bases, Inference Structures and Preferred Extensions	40
I.2.B Dynamic Criticism: Dialogue Protocols	53
I.2.C Audiences, Context and a Modelling Condition	57
I.3 Object of Investigation: Argument Schemes for Legal Argumentation	60
I.4 An Argument-Scheme Approach	65
I.5 Four Claims	69
<u>Chapter II. Argument Schemes</u>	71
II.1 Fundamentals of Argumentation Theory	72
II.1.A Types of Generalization, Types of Argument and Inferences	72
II.1.B Burden of Proof	86
II.1.C Attacks	105
II.2 Argument Schemes and Argument Maps	126
II.2.A Defining Argument Schemes	126
II.2.B Refining Argument Schemes	133
II.2.C Argument Maps	140
II.3 Argument Schemes: Relevant Issues	145
II.3.A How do Argument Schemes arise from Argumentative Practice?	145
II.3.B Are argument schemes binding?	153

II.3.C Degrees of abstraction in argument schemes	159
II.3.D Other Issues	164
II.4 The Need for Legal Argument Schemes	170
<u>Chapter III. Rules and Precedents</u>	175
III.1 Rules (Statutes)	176
III.2 Precedents	182
<u>Chapter IV. Teleological Reasoning</u>	187
IV.1 Concepts from other fields of knowledge	191
IV.1.1 MCDM - Appropriate Outcome	191
IV.1.2 MCDM – Decision-making procedures	197
IV.1.3 Measurement Theory - Scales	202
IV.2 Proportionality Analysis	205
IV.2.1 Suitability	211
IV.2.2 Necessity	215
IV.2.3 Strict Proportionality or Proportionality in the Narrower Sense	223
IV.2.4 Argument Schemes for Proportionality Analysis: a first version	236
IV.2.4.A Suitability	239
IV.2.4.B Necessity	242
IV.2.4.C Strict Proportionality	244
IV.3 Application of Proportionality Analysis	247
IV.3.1 The Majority Vote	251
IV.3.1.A Suitability - Whether there is a legitimate aim	251
IV.3.1.B Necessity – Whether the measure is necessary in a democratic society	283
IV.3.1.C Strict Proportionality – Whether the measure is necessary in a democratic society	295
IV.3.2 The Dissenting Vote - Nußberger and Jäderblom	302
IV.3.2.A Suitability Step - Whether there is a legitimate aim	302
IV.3.2.B Necessity – Less restrictive measures	313

IV.3.2.C Strict Proportionality - other relevant values – Pluralism and tolerance	314
IV.3.2.D Strict Proportionality - Margin of Appreciation	316
IV.3.2.E Strict Proportionality - Consequences for the women concerned	324
IV.3.3 Conclusions	327
IV.4 Refinements of the Model	329
IV.4.1 Institutional Deference	329
IV.4.2 Two closed world assumptions: A set of principles and a set of alternatives	334
IV.4.3 A refined model of proportionality analysis and its argument schemes ...	341
IV.4.3.A Legal Possibility and Suitability	341
IV.4.3.B Necessity (or Nondominance)	347
IV.4.3.C Strict Proportionality	349
IV.4.3.D Proportionality Analysis Revisited	350
IV.4.4 Further Challenges for Proportionality Analysis	351
IV.4.4.A Weight Assessment	351
IV.4.4.B Omission, Social Rights and Effects Modulation	352
IV.5 Is Proportionality Analysis Rationally Controllable?	354
<u>Conclusions. The Reasonable Answer</u>	357
Bibliographical References	365

INTRODUCTION

THE QUEST FOR THE RIGHT ANSWER

1. Object of Investigation

It is said that the Law is the enterprise of ruling human activity, and one of its objectives, perhaps the most prominent and commented upon, is to achieve *legal certainty*. Although it is very difficult to define precisely what legal certainty is¹, everyone has an intuitive knowledge of where uncertainty lies. Rules that constantly change, or which are not followed, are some examples. Particular concern is given to the judicial cases involving widespread controversy, known as *hard cases*². In these situations, there are arguments upholding opposite solutions, and the problem boils down to a *quest for the right answer*.

My general aim is to contribute to pursue this quest by helping to answer: *how to decide which legal argument is stronger?*³. I will do so by presenting a technical-contextual approach to building a model of legal argumentation, illustrated by the study of proportionality analysis. The model should enable the representation of a judicial decision's justification in an *argument map*, a diagram that helps the visualization of arguments and their relations of support and attack, offering a clear picture of how the case solution is defended. The main tool I will use to perform this task is the *argument scheme*, which will be first presented in Chapter I.

¹ The difficulty may be found in discussions of legal certainty in the philosophy of Law. Lon Fuller's Chapter II ("*The Morality that makes Law possible*") of his book *The Morality of Law* (1964) describes eight *desiderata* of the legal enterprise, which may all be considered aspects of legal certainty. The examples provided by Fuller reveal the complexity of the matter, which may be explained by the fact that the realization of the aspects of legal certainty may be evaluated as a matter of degree (what Fuller calls a "morality of aspiration"). In Brazil, an extended analytical study about legal certainty has been published by Humberto Ávila, called *Teoria da Segurança Jurídica* (2011, originally published with the title *Segurança Jurídica: Entre permanência, mudança e realização no Direito Tributário*). Although it is focused on Brazilian Tax Law, it presents a more general theoretical that reveal the complexity of legal certainty. The book has been recently translated to English as *Certainty in Law*. FULLER, 1969; ÁVILA, 2016.

² The concept of hard cases as controversy seems equivalent to Juliano Maranhão's concept of *underdetermined cases* (in Portuguese, "*casos subdeterminados*"). MARANHÃO, 2013, p. 100-113. Although the criteria of existence of controversy is somewhat imprecise, I believe it is sufficient for the purposes of this Introduction.

³ In a way, my question echoes the opening line of Ronald Dworkin's *Law's Empire* (1986): "*It matters how judges decide cases*". My concerns are similar to his, but my approach to legal argumentation will be very different, due to the technical conceptual framework I intend to use. DWORKIN, 1986.

The technical conceptual framework and tools will be drawn from the fields of Argumentation Theory, Informal Logic⁴ and Artificial Intelligence and Law (which I may collectively refer as just “argumentation theory”, without capital letters). The contextualization will be introduced with the help of theoretical accounts about legal issues. The combination of both shall provide a set of adapted tools that will help in the description and evaluation of legal argumentation. The benefits of such an approach should become clear during the investigation of proportionality analysis.

The problem of determining the stronger legal argument is paramount not only to philosophers of law, but to lawyers and citizens alike⁵. If the Law depends on argumentation for its judicial application, and it is not possible to decide which argument should prevail, then the Law fails in guiding human conduct. Given such an event is rare, the legal system’s shortcomings may be tolerable. Nonetheless, if it becomes ordinary, the enterprise urges to be reviewed.

In hard cases, the difficulties of determining the stronger legal argument stand out. Despite the controversy, it might yet be possible to obtain the right answer. But, assuming judges cannot justify their preferences in certain situations, why should we let them decide? Wouldn’t it be better to let the decisions be taken by the parliament, referendum, a jury or any other way?⁶ Thus, the *institutional design* of a legal judicial system depends, at least partially, on its performance with respect to achieving legal certainty and obtaining the right answer.

The importance of finding the right answer in a judicial case is clear in relation to the wider quest for legal certainty and to institutional design. As a consequence, its investigation becomes justified. However, preliminary objections to such a project naturally arise. The commonplace would be to ask whether it is really possible to obtain the legal right answer⁷.

⁴ The differences between the fields of Argumentation Theory and Informal Logic are not very clear, but I will use both names to characterize the literature I am referring to in a more comprehensive way.

⁵ MACCORMICK, 2008 (a), p. 361, whom, by his turn, mentions ALEXI, 1989.

⁶ I am not discussing judicial review of the legislation yet, but a more general problem of legal justification in any situation. However, judicial review is certainly a good place to find hard cases.

⁷ A classical theoretical discussion about the possibility of finding the right answer in legal cases is found in the text *No Right Answer?* by Ronald Dworkin (DWORKIN, 1977 (a), later revised and republished as *Is there really no right answer in hard cases?* in DWORKIN, 1985, Chapter 5).

Unless someone is truly skeptical, the issue needs to be circumscribed to hard cases or to even more detailed situations. So, let us suspend such line of inquiry for a moment and pursue another one, whose utility to shape the object of study will become clear: *how does one know an answer is the right one?*

I argue that the right answer is obtained by following *rules of argumentation*. If one wants to know whether an action is legal or illegal, he should look for the relevant legal norms. It is no different when it comes to arguments. An argument will be sound or not, depending if it has followed a rule of inference. But the scope of my rules of argumentation is not limited to evaluating a single argument, composed of one or more premises and a conclusion. As it will be discussed in due time, they comprise rules about knowledge bases from which premises may be taken, the relations of attack between arguments, burdens and standards of proof, and a wide range of procedural rules. Together, they enable the determination of what we intuitively denominate the stronger argument.

An investigation about how to obtain the right answer in a judicial context is a study of certain *rules of legal argumentation*. A proper discussion of such rules will depend on an argumentation conceptual framework, methodological tools, and on legal knowledge. If one were to enact a statute on banking regulation, he would need knowledge about the law, techniques for writing statutes, and an understanding of the banking system and its practices. Analogically, it is the same with legal argumentation. Hence, the technical-contextual approach I am advocating for.

If one can accurately describe the rules of legal argumentation, he might be able to discuss the possibility of finding the right answer with much more precision. He shall be able to identify the situations in which it is possible, and explain how to obtain it. And, if it is not possible to determine the right answer, the source of difficulties may be duly recognized.

I have chosen to illustrate this approach to legal argumentation with the study of proportionality analysis, which takes place when the Judiciary must determine whether some piece of legislation complies with higher norms, such as a Constitution or an International

Treaty. The analysis is often summarized in a multi-step test, that ultimately aims to establish if the marginal gains produced by a legal provision outweigh its marginal losses, in terms of legal values (or legal principles, as many would call them). There are a number of reasons for this choice.

Proportionality analysis is a relevant subject in its own right. Recent academic production shows that it has spread worldwide in the practice of courts of both *common law* and *civil law* traditions⁸. As a consequence of being applied by constitutional and international courts, it is used to address matters of great social relevance, frequently related to human rights⁹. Lastly, it is a constant object of study and criticism, often centered in the possibility of it being rationally controlled¹⁰.

From the perspective of the technical-contextual approach I propose, proportionality analysis is particularly interesting. There are efforts to detail how it should be carried out by courts, especially the influential account of Robert Alexy¹¹. Thus, on the one hand, there is enough groundwork to let the argumentation tools be adapted. On the other hand, however, it remains controversial and difficult enough to offer plenty of room for discussion and improvements, allowing the technical framework to yield innovations. Furthermore, there are plenty of real hard cases to test the argumentation tools.

Finally, the discussions about proportionality analysis show that rules of legal argumentation may be justified by reference to matters of institutional design. For instance, one could argue that judges should defer to the weighing of values carried out by elected authorities if there is a wide and reasonable disagreement on the subject¹², given the democratic quality of such authorities. Thus, it illustrates how models of legal argumentation might be connected to problems of institutional design.

⁸ STONE SWEET, MATHEWS, 2008; SCHLINK, 2012.

⁹ As it becomes clear of the description found in STONE SWEET, MATHEWS, 2008.

¹⁰ For a survey on the criticism to proportionality analysis, see GORZONI, 2011, Chapter 2.

¹¹ In the form presented in the 2002 Postscript to the *Theorie der Grundrechte* (1986, in English *A Theory of Constitutional Rights*, in Portuguese *Teoria dos Direitos Fundamentais*). ALEXY, 2008.

¹² This is the position of the European Court of Human Rights in the *S.A.S. x France* case (Application 43835/2011, decision 1st July 2014). The deference is revealed in the margin of appreciation conceded in cases of wide and reasonable disagreement about a subject. I will discuss this case in Chapter IV.

Now that the relevance of the object of investigation is clear, for both its general and specific themes, I will elaborate on the technical-contextual approach I intend to develop and its promising features. The innovative results of the investigation derives from such an approach.

2. A Technical-Contextual Approach to Legal Argumentation

There are many studies on legal argumentation, but the approach to be developed in this work has some particular characteristics when compared to mainstream books of legal theory and philosophy of law, on the one hand, and to works in Argumentation Theory, Informal Logic and Artificial Intelligence and Law, on the other. These traits should result in some benefits.

Argumentation-wise, this work intends to be more *technical* than your average account of legal reasoning arising from legal theory or philosophy of law. Some classical accounts of legal reasoning and legal argumentation may be found in books like: *Legal Reasoning and Legal Theory* (1978) and *Rhetoric and the Rule of Law* (2005), by Neil MacCormick¹³; *Theorie der juristischen Argumentation: Die Theorie des rationalen Diskurses als Theorie der juristischen Begründung* (*A Theory of Legal Argumentation: The Theory of Rational Discourse as Theory of Legal Justification*, 1978) and *Theorie der Grundrechte* (*A Theory of Constitutional Rights*, 1986, Postscript of 2002) by Robert Alexy¹⁴. If one compares the conceptual framework of Chapters I and II to these accounts, it becomes clear that argumentation is handled differently. The framework given by the literature I am referring to allows a description of how argumentation works step-by-step, proposition by proposition, being as explicit and precise as possible about it.

This is not to say that general accounts are inferior in anyway. They pave the way to more detailed studies, such as this one, and works by MacCormick and Alexy will be major references in Chapters III and IV. However, if we are to obtain an accurate and satisfactory

¹³ MACCORMICK, 1978; MACCORMICK, 2005.

¹⁴ ALEXY, 1989; ALEXY, 2008.

answer to the question of how to decide which legal argument is stronger, we need further developments, which will benefit from an advanced conceptual framework to discuss argumentation.

Other similar attempts to use argumentation theory to deepen the investigation of more general accounts of legal argumentation may be found in the literature. For example, Thomas Gordon's book *The Pleading's Game* (1995) offers a formal model based on Robert Alexy's idea of procedural justice¹⁵; Giovanni Sartor built a formal model to assess proportionality judgments, also making reference to the work of Robert Alexy¹⁶; Douglas Walton, Giovanni Sartor, and Fabrizio Macagno have published recently on statutory interpretation¹⁷, having as a major source of inspiration the typology of arguments created by Neil MacCormick and Robert Summers in *Interpreting Statutes* (1991)¹⁸.

Following the lesson of works such as these, in spite of being based on Argumentation Theory, Informal Logic and Artificial Intelligence and Law, this investigation aims to be rather *contextual*, that is, concerned with the particularities of legal argumentation. Many types of models might be used to describe or evaluate legal reasoning, but there is always the risk of them being too abstract to provide meaningful help to solve a real case or particular challenges of legal argumentation. If there is some distinctive feature of legal reasoning, models that are too abstract are unable to grasp it.

Although contextual models are essential, and the Law is a constant object of attention, argumentation tools for legal purposes remain underdeveloped, and much research is still required. For instance, Douglas Walton, Giovanni Sartor and Fabrizio Macagno have recently recognized explicitly that issues of statutory interpretation have been neglected by Artificial Intelligence and Law research¹⁹. This is no minor issue, given that the theme is a crucial problem of legal argumentation.

¹⁵ GORDON, 1995.

¹⁶ SARTOR, 2010; SARTOR, 2013.

¹⁷ WALTON, MACAGNO, SARTOR, 2014; WALTON, SARTOR, MACAGNO, 2016.

¹⁸ MACCORMICK, SUMMERS, 1991.

¹⁹ WALTON, SARTOR, MACAGNO, 2016, Conclusions.

My Master's Degree dissertation corroborates the diagnostic of general insufficiency. In that opportunity, I have tried to use the important tools known as argument schemes to build an argument map. The subject was the responsibility of the State and military personnel due to events (especially tortures, kidnappings and executions) occurred during the Brazilian Military Government, with a particular emphasis in the criminal responsibility discussed by the Brazilian Supreme Court in the lawsuit ADPF 153²⁰. Although I had dozens of argument schemes at my disposal, taken from a compendium found in the book *Argumentation Schemes* (2008)²¹, it was very difficult to use them for description or evaluation, since they were not tailored to the needs of legal argumentation. In order to carry on the task, I ended up building new schemes of my own²², which came to be very helpful, despite not entirely satisfactory and far from sufficient.

In short, the *technical-contextual approach* to legal argumentation receives its name because it is more technical than the most traditional accounts of legal theory in the description of argumentation, using a particular conceptual framework, but concerned with the particularities arising out of legal context. The use of argumentation schemes and argument maps as tools (which will be explained in Chapter I), and all the conceptual framework embedded in it, will provide the analytical technical edge. Contextuality will stem from taking into consideration legal theoretical accounts, and real legal material, especially hard cases. The general concept of the approach itself is not an innovation, since some of the works referred above more or less follow the ideas outlined here. However, it is a clear manifest of a research agenda that should be further developed.

As it has been presented until now, the approach of this work remains quite abstract. There are many possible technical methodologies that could be employed. Unavoidably, the precise outline of the conceptual argumentation framework and its tools will only be made clear by the presentation of Chapters I and II. For now, however, I may advance that my

²⁰ The name of the judicial remedy could be translated as Remedy for the Non-Compliance with a Constitutional Fundamental Precept (in Portuguese, *Arguição de Descumprimento de Preceito Fundamental - ADPF*).

²¹ WALTON, REED, MACAGNO, 2008.

²² NÓBREGA LUCAS, Victor. Mapa Argumentativo do Caso Araguaia em Protocolo de Disputas. Chapter II.

framework is *informal (or semi-formal)*, bearing more resemblance to natural language than to mathematical equations.

The idea of an informal framework calls for clarification on the relationship between informal logic, formal logic and artificial intelligence in the study of argumentation. In a conveniently simplified explanation²³: *informal logic* investigates the use of argument in natural discourse, revealing the rules that guide argumentation and building precise concepts for its comprehension; *formal logic*, aware of the rules and concepts already provided, creates a representation model in artificial language, allowing for the realization of a calculus; and *artificial intelligence* converts the formalized model into something that can be understood and reproduced by a machine. Many works have been jointly written by researchers focused on these different areas. In addition, despite the focus of some text, references to all areas are often made.

Given this “division of labor”, informal logic seems to have the fundamental role of providing the necessary starting point for formal logic and artificial intelligence. A formal logical model that has not been preceded by detailed observation of argumentation practice will end up furnishing an erroneous or simplistic representation and possibly lead to perplexities disconnected from reality. The avoidance of such problems calls for an informal analysis groundwork.

Once the role of informal logic has been established, reasons in favor of the chosen framework can be presented. Informal logic is closer to the average lawyer than formal logic or artificial intelligence. Lawyers, particularly those who work with lawsuits, analyse argumentation in a similar fashion to the informal logician, but without his theoretical knowledge and tools. Traditional legal education (at least in Brazil) and profession keeps lawyers away from the language of formal logicians, and even further away from the concerns of artificial intelligence researchers.

²³ Of course, in reality these lines are blurred. It is possible to find texts whose main subject is formal logic or artificial intelligence, but that makes important contributions to informal logic, clarifying the rules that guide argumentation. WALTON, 2013, draws attention to the benefit of the interdisciplinarity of these studies.

Besides, informal logic deals more directly with the problem of how to choose the right answer, examining rules of argumentation and their application. Formal logic and artificial intelligence have complex challenges of their own²⁴, related to argumentation representation and systems implementation that pushes them away from the core problem, of how to decide which argument is stronger.

Finally, an informal approach is favorable to teaching argumentation. Historically, the field of Informal Logic had its development in the United States and Canada during the 1970's. It emerged linked to courses on how to argue about political and social problems, taught by philosophy scholars²⁵. Today, many textbooks on the subject can be found, as mandatory reading material to graduation argumentation courses (also known as “critical thinking” courses)²⁶. Notwithstanding, this work does not intend and cannot be as didactic as these textbooks, since it comprises an investigation about the rules of legal argumentation.

It is also important to offer reasons for choosing the fields of Argumentation Theory, Informal Logic and Artificial Intelligence and Law to provide the conceptual apparatus of this work. Certain justifications of my choices will be left for later, since they only make sense after a detailed exposition, to be found in Chapters I and II. Nonetheless, I am already able to explain what I believe to be the two main advantages of these fields of studies.

First and foremost, the literature develops an *argumentation technology*, an organized knowledge about the techniques and processes of arguing, that aims at identifying, analysing, evaluating and creating arguments²⁷. Said technology, in principle, allows precise descriptions and evaluations of real cases, by showing “*how*” argumentation works. It is worth noting that the Law has served as an object of study and as a fountain of inspiration

²⁴ An overview of the representation challenge with non-monotonical logics may be found in PRAKKEN, VREESWIJK, 2002. Challenges more directly related to the Law can be found in the following review, PRAKKEN, SARTOR, 2015.

²⁵ BLAIR, 2009, p. 18-19.

²⁶ Some examples, WALTON, Douglas “*Fundamentals of Critical Argumentation*” (WALTON, 2006(a)); GOVIER, Trudy “*A Practical Study of Argument*” (GOVIER, 2010); WRIGHT, Larry “*Critical Thinking*” (WRIGHT, 2012); TINDALE, Christopher W. “*Fallacies and Argument Appraisal*” (TINDALE, 2007).

²⁷ WALTON, 2013, p. 3.

for researchers of argumentation theory²⁸. Since legal activity constantly demands argumentation, it offers a privileged perspective to observe how argumentation functions²⁹. At the beginning, legal experience helped the development of argumentation theory, but now its concepts and tools can be used to enhance our knowledge about legal argumentation.

The best way to face certain issues is by a “how” approach. For instance, is it possible to create a human colony in Mars? People may argue indefinitely, but if a group of people successfully does it, the discussion is over. And, to do it, one needs to ask “how” and start planning every detail from there. How would people reach the planet? How would they get food and oxygen? How would their illnesses be treated? As the plan unfolds, old challenges are reformulated, new difficulties appear, and solutions are proposed. Every problem and solution are meaningful steps in answering the original question.

The problem of finding the right answer is one of these issues that demand a “how” approach, hence the formulation of the question “how to decide which legal argument is stronger?”. Instead of abstractly arguing whether it is possible or not, it seems most promising to discuss how. Such an approach allows one to address an argument that seems the most difficult challenge to the existence of the right answer in any given hard case: the *persistent controversy argument*³⁰. According to it, a right answer presupposes an argument whose conclusion needs to be accepted by the arguers, otherwise they would be deemed irrational³¹. The existence of controversy among experienced lawyers debating sincerely³² – which can be considered rational – is evidence that there is no argument with the required

²⁸ For this reason, there is a subarea within the Artificial Intelligence domain of knowledge called Artificial Intelligence and Law. There are specialized journals (e.g. Artificial Intelligence & Law), congresses (e.g. ICAIL – International Conference on Artificial Intelligence and Law) and even an international association (IAAIL – International Association for Artificial Intelligence and Law).

²⁹ This is one of the common points found in the classical accounts of Stephen Toulmin in *The Uses of Argument* and Chaïm Perelman and Lucie Olbrechts-Tyteca in *The New Rhetoric: A Treatise in Argumentation*. TOULMIN, 2003; PERELMAN, OLBRECHTS-TYTECA, 1969.

³⁰ The existence of controversy is an element that can be found in various arguments against the thesis that ordinarily there is a right answer. Despite the fact we are not following any author in particular, we believe many sceptics could embrace this argument.

³¹ The first part of the argument resembles the “*demonstrability thesis*” attacked by Ronald Dworkin in (DWORKIN, 1985, Chapter 5). However, we have chosen a different name due to the last part of the argument as presented above. In my depiction, it is not enough to reject the need for demonstrability and to conclude for the possibility of preferable arguments. The persistent controversy argument questions the practical viability of deciding which argument is preferable.

³² Highlighting the importance of sincerity, EEMEREN, GROOTENDORST, SALLY, JACOBS, 1993, p. 3.

property, and, ergo, that there is no right answer. It is no use to claim the possibility of a right answer if, in practice, there are no evaluation criteria clear enough to end the debate when the best argument appears. In other words, excluding those that do not understand legal practice and those that do not believe in what they are standing for, if, at the end of the day, after a debate, the controversy persists, there is no right answer.

To defeat the persistent controversy argument in a hard case, both knowledge about the subject matter and the legal rules of argumentation are required. In such cases, argumentation is usually complex or even confusing, and a systematic methodology becomes of utmost importance. Only a careful argumentation analysis will allow one to explain, in detail, why a thesis should prevail. An argumentation technology is intended to satisfy those needs.

Second, the development of studies with such argumentation technology may lead to *artificial intelligence implementations* tailored for the use of legal practitioners. Nowadays, some argument assistant software can be found, with varying functionalities and complexity degrees, as an offspring of the joint effort between argumentation theorists and artificial intelligence researchers³³. If the necessary groundwork is covered, new programs could be built with enhanced capacity of helping judges, attorneys and lawmakers.

A figure that embodies this ideal and may help the visualization of the possibilities of artificial intelligence before us is what I call the *Talos judge*. In Greek mythology, Talos was an automaton created (by the god Hephaestus or the mortal Daedalus, depending on the myth version) to protect Crete from invaders. In other words, it was created to automatically perform specific tasks which help carrying out the will of others. Thus, the Talos judge represents any machine computer program designed to assist lawyers in accomplishing their objectives. Its modest place as an assistant makes it quite different from other mythological judges found in legal theory³⁴.

³³ An example is *Carneades* (available in <http://carneades.github.io/>, last access in January 8th 2017). More examples will be given just below.

³⁴ Compare, for example, with Ronald Dworkin's judge Hercules (DWORKIN, 1977, Chapter 4) or François Ost judges Zeus (Jupiter), Hercules and Hermes (OST, 2007).

Imagine one wants to support a certain thesis, for instance, that the crime of passive corruption has been committed by Ronald, a public tax agent. The lawyer enters this proposition into a program interface, and Talos searches for the relevant legal provision that defines the crime of corruption. After finding the relevant norm, it lists its necessary and sufficient conditions, and asks the lawyer about the evidence supporting each one of them. If the lawyer enters enough evidence, then Talos also requests all relevant dates to verify whether some statute of limitations is applicable. If the program is sufficiently developed, maybe it could scan for the information in supplied digital documents. In any case, the interface shows each step of Talos's reasoning to conclude for or against Ronald. It is easy to visualize each proposition and how it is backed by rules, precedents or evidence. Possible exceptions and attacks are also represented. The whole reasoning is explicit and ready to be analysed by the lawyer.

Of course, an operational Talos judge functioning as described still requires a lot of effort, but it is not a far-fetched delusion. Programs that help to visualize the reasoning step by step already exists, despite its eventual flaws, like Carneades, Araucaria, ArguMed and Rationale³⁵. To find the relevant norm, one could depend on a structured knowledge base or use the help of a program that searches for relevant information in unstructured databases (written in natural language), such as the commercial application Ross³⁶, designed to carry out legal research. As to the particular case, the Brazilian National Council of Justice made available in its website a program to verify the applicability of criminal statutes of limitations³⁷.

Although the Talos application described above is appealing, one should not discard simpler programs made to assist lawyers which could still be quite useful. For instance, a program for helping to decide whether some person has the right to obtain a social benefit. In Chapter I, after presenting argument schemes as the main argumentation tool of the investigation, I explain how this work may contribute to develop some abilities of the Talos judge.

³⁵ WALTON, REED, MACAGNO, 2008, Chapter 12. Carneades was referred in another footnote above.

³⁶ <http://www.rossintelligence.com/>, last access in January 8th 2017.

³⁷ In Portuguese “Calculadora da Prescrição da Pretensão Punitiva”, available at <http://www.cnj.jus.br/sistema-carcerario-e-execucao-penal/calculadora-de-prescricao-da-pretensao-punitiva>, last access in January 8th 2017.

Two closing remarks are in order to characterize the approach. My argumentation framework is *dialogical* (or procedural), it considers that one does not search for the right answer via unidirectional demonstration, but by a process in which parties have the opportunity to state conflicting arguments and uphold their claims. Such a feature is not only in line with the recent trends of argumentation theory, but also with the requirement that courts of law should be deliberative³⁸.

Testing the argumentation tools with *real cases* is of the essence, especially hard ones. Not only as a way to verify if they are working properly, but as a method of investigation. Much can be learned by researching the application of some tool, especially when the context must be taken into consideration to adapt it. This is why a long case analysis is carried out in Chapter IV, Section IV.3.

After describing and justifying, as long as possible now, the approach to legal argumentation of this work, I shall introduce its structure and some notes regarding its presentation style.

3. Structure of the Work

Chapter I provides an overview of what is needed to build a model of legal argumentation. It presents the fundamental distinction between a static and a dynamic perspective, as well as the most abstract elements to be modeled. The main tools of the work, argument schemes and argument maps, are presented, further detailing the object of the study and my technical-contextual approach as an argument scheme approach. Lastly, I present four claims directly related to it.

A discussion of the argumentation conceptual framework and the main tools used is found in Chapter II. I also raise important questions about the use of the tools to represent argumentative practice, eventually focusing on legal argumentation. I end by arguing for the relevance of building legal argument schemes.

³⁸ MENDES, 2013; SILVA, 2013.

A brief account of arguments based in legal norms and precedents is given in Chapter III, which focuses on presenting some basic important argument schemes and pointing the direction of further research, which should unify technical argumentative investigations with theoretical accounts.

The heart of the work, a study of proportionality analysis, is in Chapter IV, by far the longest and most challenging. It starts by characterizing proportionality analysis against a wider background of teleological reasoning, then moves to discuss it according to the theories of Robert Alexy. Specific argument schemes are developed and subsequently tested in a real hard case from the European Court of Human Rights. After the application, the schemes and the model of proportionality analysis are reviewed, and additional challenges are described. The last section is dedicated to briefly discuss the virtues and vices of proportionality analysis.

The Conclusions summarize some general findings of the investigation, mainly as a defense of the approach followed in the work, and make some remarks on the continuation of a research agenda.

4. Presentation Style

The audience I had in mind while writing was a reader with no prior knowledge of argumentation theory, and just some acquaintance to the Law. He can be properly represented by a law school undergraduate student. The text is not meant to be didactic, but understandable with some effort from such reader. Despite being the imagined audience, this work is not supposed to be useful only to them. On the contrary, the effort of making oneself clear to a nonexpert can be quite enlightening for specialists.

Given the audience, I have abided by some principles, which define a presentation style:

Overview: Whenever possible, I try to explicitly state how my investigation is related to the wider literature about the subject. Chapter I's presentation of the basic elements of a model is an example. It might be used to organize discussions on technical literature on argumentation theory, informal logic, and artificial intelligence and law.

Progression: I start with the most basic concepts and progressively add details and complications. As a general formula, I introduce a concept, present examples, discuss difficulties, and restate it in a more detailed way. There are two subprinciples about the presentation of the technical argumentation conceptual framework:

- Legal problems are progressively introduced in examples and approximations. Usually, the core concepts are more easily understandable with mundane examples.

- Examples are recalled often as a way to explicitly show how analysis of argumentation can get deeper.

Line of reasoning: Whenever possible, instead of just presenting definitions and showing illustrations, I try to follow a line of reasoning in which the discussion of a problem or concept leads to another. This is especially important to show relationships and connections that must be thoroughly understood to discuss argumentation models.

References: References are almost always covered in footnotes. Direct citations or references to other authors in the running text will be scarce. The point is not to disrupt the flow of argument, making the text seamless and easier to read. Given the sheer number of technical concepts, if I were to constantly make references in the running text, it would probably get confusing (or even annoying). In other words: Do not worry, if you do not take my word for granted and want to check what authorities have said on the matter, the references will be there for you.

Technical Details: Technical details which I do not consider critical to the understanding of the point at hand for my intended audience, but could be useful for specialists, will be left to footnotes. This may include eventual comparisons of ideas between authors or distinctions

between what I am arguing and what someone else argued. Of course, if a point is too important, it will be discussed in the text with due references in footnotes. But my goal is to explain the subject based on the literature, not to explain the literature itself. The work does not intend to be a review (although it is sometimes based on one, as the references show) or a history of the ideas and arguments on the subject. Of course, I will adhere or reject ideas by many authors in the process, but I will not thoroughly reconstruct and discuss all of them. Such a procedure would render impossible to advance on the subject in a few pages. This orientation leads to a rule of thumb:

- If you are an expert and you have a doubt about some point or feel that a discussion could be related, I invite you to look at the footnotes. The same applies if you are a curious person and wants the text to give you more trouble than what it is worth.

Italics: Besides Latin expressions, I will use italics whenever first introducing important concepts or, more rarely, to highlight important ideas.

CONCLUSIONS

THE REASONABLE ANSWER

This work intended to advance an *in-depth study of proportionality analysis* grounded in the *argument scheme approach to investigate rules of legal argumentation*, that was meant to provide a detailed description of legal argumentation involving values (principles, in Alexy's terminology). Such an approach is based on the combination of tools of argumentation theory (not only argument schemes, in spite of the name) with accounts of legal theory, and their application to real, preferably hard, cases. This investigation followed the seven-step methodology detailed in Chapter II, Section II.2.B. Indirectly, it also provided, by the means of illustration, a support of the four claims stated in Chapter I, Section I.5, related to the argument scheme approach. It is time to retrace the path, highlight some key remarks, and indicate what I believe to be the humble contributions of this work.

In Chapter I, I started distinguishing between a static and a dynamic perspective on the right answer, and defined the concepts of best answer available and ultimate answer, respectively, the results of an analysis of the existing arguments and of every conceivable argument. A model of argumentation could help us find these answers, so, I introduced its basic elements: a knowledge base, inference structures, preferred extensions (related to attacks and burdens of proof), and a dialogue protocol containing rules of argumentation, including procedural rules and those related to all other elements. The notion of an audience emphasised the importance of context in building a model, and the Latin aphorism "*quod non est in actis non est in mundus*" balanced it with the need to consider every contextual aspect according to the aforementioned elements. The description clarified the dialogical setting in which argumentation may occur.

Still in Chapter I, I first presented the concept of argument scheme and also limited the object of investigation to arguments about legal rules in the context of a judicial lawsuit, reinforcing the emphasis on those related to proportionality analysis. Further advantages and delimitations of the argument scheme approach were introduced. The argument scheme's flexibility to deal with lower levels of abstraction rather than traditional formal logical accounts, possible applications to artificial intelligence, and the fact that other tools must

complement the approach, were regarded as especially important. The Chapter ended with four claims whose support are a side-effect of the work, and which I repeat here for the sake of convenience:

First Claim (Legal Theory): It is possible to decide which legal argument is stronger and, consequently, whether there is a best answer (a right answer from a static perspective), in the context of judicial adjudication.

Second Claim (Legal Theory): Legal argumentation and institutional design are intrinsically connected.

Third Claim (Approach to Legal Theory): Argumentation tools, in general, and argument schemes, in particular, are useful to investigate legal argumentation, institutional design and legal theory.

Fourth Claim (Approach to Legal Theory): Real cases are important to develop argumentation tools, in general, and argument schemes, in particular.

I began Chapter II discussing in detail fundamental concepts for a proper understanding of argument schemes: rules of inference, burden of proof and attacks. Some minor technical contributions were introduced. Preliminarily, a tentative distinction between the rules in the premises of an argument and the rules of inference. Regarding burden of proof, I proposed a twofold classification of propositions, related to the act of assertion, on the one side, and the acts of contest and support, on the other. The classification of the restrictions to the act of assertion was wholly novel, as far as I am concerned, while the other was strongly built on previous work. A classification of the propositions status was also created based on antecedent studies. With respect to attacks, I also introduced a new twofold classification of attacks (structural and functional), and a distinction from procedural objections, drawing on previous attempts. The descriptions of the different ways in which an exception may be used as an attack, and the potential acts involved, are worth highlighting. In all cases, the explicit comparison to existing literature was left to footnotes, due to the presentation style assumed in the Introduction. Nevertheless, further discussions

on each technical contribution might be made in future opportunities, by the submission of papers and articles to the appropriate conferences and journals.

Chapter II continued with a structured presentation of the definition of a scheme and, most importantly, of a seven-step methodology for their investigation and refinement, which also expanded previous work. On the one hand, it emphasised the importance of context, especially domain theoretical accounts and the activity of testing a scheme with real cases. On the other hand, it detailed the construction of the argument scheme as a representation device. A simplified convention for argument maps was introduced, with the peculiar features of using a list of propositions, as well as a collapse and expand dynamics, which aids in dealing with extended argument maps.

After the definition of argument schemes and a methodology for their investigation, relevant issues concerning argument schemes were debated. I explained that rules of argumentation are accepted by a collectivity, which uses them in practice as a pattern to evaluate argumentation. These rules are inscribed in argument schemes. Next, I discussed in what sense an argument scheme and the rules of argumentation may be considered binding, given a dialogical setting of arguments that attack each other and the lack of a deductive demonstration. I argued for the existence of a dialectical cogency, in which one identifies the best answer available by applying the rules of argumentation of a dialogue protocol: in the absence of deductive arguments, this is all the cogency one can expect. It was also shown how argument schemes can handle different degrees of abstraction. Finally, I introduced some difficulties in argument reconstruction, and the relevance of an argument scheme classification.

An interesting point about these discussions, only mentioned in passing in Chapter II, is that they may be related to discussions of legal theory. First, if there are rules of legal argumentation, maybe we will need to review our picture of the Law as a system of rules arising from authoritative sources (legal positivism source's thesis). Legal norms, and propositions of Law in general, in some way derived from rules of legal argumentation, should also be included as part of the Law. Second, the debates about the existence of a legal right answer in hard cases (legal positivism discretionary thesis) benefit from the concept of

dialectical cogency, which specifies in what sense one may speak of a right answer. At last, by showing how legal argument schemes relate to more general argument schemes, one may describe more accurately the relation between practical reason and legal reasoning, its coincidences and differences.

In the last section of Chapter II, I sustained why would it be important to develop legal argument schemes, focusing on the advantages of an enhanced precision in argumentation for hard cases, teaching and artificial intelligence. The limitations of current literature using a similar conceptual framework to address legal reasoning were also mentioned.

Chapter III offered a very brief overview of discussions about the application of rules and use of precedent, the cornerstones of legal certainty. I presented an argument scheme for applying legal norms that allows for the discussions of facts and evidence, legal qualification of facts, interpretation and validity of legal norms, aiming to cover all possible legal discussions. I also commented on the difficulties of using a precedent, which is a complex piece of reasoning that applies rules to solve legal issues, presented an argument scheme for a particular use of it (strict use of precedent), and indicated lines of inquiry for future research.

In Chapter IV, I applied the seven-step methodology for the investigation of argument schemes. I informally described proportionality analysis, framing it against a background of teleological reasoning. Then, I resorted to the literature of Multiple Criteria Decision Making and Measurement Theory to describe some basilar useful concepts for teleological reasoning. In the next section, I discussed in detail Robert Alexy's theoretical account of proportionality analysis, having as a main reference the 2002 Afterword of the book "*Theorie der Grundrechte*" (*A Theory of Constitutional Rights* in the English translation, *Teoria dos Direitos Fundamentais* in the Portuguese translation). In this way, domain theoretical literature was used to identify the relevant propositions. Thus, after discussing Alexy's theory, I built a first version of the argument schemes for proportionality analysis, highlighting possible discussions about the burden of proof of the propositions.

Subsequently, the argument schemes were tested in a long discussion of the case *S.A.S. x France* (Application 43835/2011, decision 1st July 2014), adjudicated by the European Court of Human Rights, a hard case of proportionality analysis. An incomplete, but extensive, argument map was developed, and several conclusions concerning the adaptation of the schemes and the performance of proportionality analysis were drawn. The following section (IV.3) incorporated the findings of the case analysis and of the previous theoretical discussions in a refined model of proportionality test, with reviewed argument schemes. Before introducing it, however, a background of debates about institutional deference and judicial review was presented, which connected the rules of legal argumentation to choices of institutional design. The presentation of the refined model was followed by listing important problems for future research. Chapter IV ended with a brief defense of proportionality analysis, as a promising model of judicial review which allows for rational control and double check of the lawmaker's teleological reasoning, given its integration into a wider conceptual framework for legal argumentation.

An indirect defense of the four claims of Chapter I, and of an argument scheme approach to legal argumentation, have been scattered throughout the work, as a consequence of applying the method. The First Claim is more of a presupposition than the others, but the argument maps of Chapter IV indicate how it is possible to structure argumentation analysis in order to evaluate the best answer, using a map of the dialogue coupled with argument schemes. The support of the Second Claim was made clear by the discussions in Chapter IV, in which it was made explicit that a model of proportionality analysis should be theoretically grounded in certain conceptions of the role of judicial review and institutional deference. The whole investigation of Chapters III and IV, but especially the latter, are supposed to support the Third Claim, and I have insisted on it during the case analysis, which also upholds the Fourth Claim. Further potential uses of argumentation tools for institutional design are indicated in Chapter IV's section on institutional deference (IV.4.4.1). The relevance of argumentation theory to legal theory is also shown in the brief analysis of Chapter II above, about issues related to argument schemes and legal theory.

The whole work has been a search for precise descriptions and evaluations of legal argumentation, which attempted to show how the appraisal of argumentation cannot be set

apart of studying the particular problems of legal theory. Legal argumentation is as much about the Law as it is about argumentation. Only an integrated conceptual framework will be able to offer a satisfyingly accurate account. In addition, rather than presenting a model of legal argumentation, the work was about the activity of building a model, according to a particular approach.

The outcomes of this work are not meant to be only theoretical. The image of the Talos judge, presented in the Introduction, should be recovered. With the right argument schemes, it can help us in creating new arguments, with argument mining; and structuring those we already have, with argument mapping. Although it was not stressed often, concepts and tools used here are being discussed in the context of artificial intelligence. This work should also offer some contribution to these studies.

Ultimately, however, as I stated in the Introduction, this work is a contribution to the quest for the right answer. In such a quest, lawyers often stumble in an elusive concept: *reasonable*. I have tried to refrain from using this infamous expression as much as possible. Everyone agrees that an answer must be reasonable, but no one accurately describes what it is exactly. Intuitively, it seems that it has something to do with static analysis and the best answer available, for if one knows for a fact that there is a better answer, he cannot say that choosing the subpar alternative is reasonable. It also seems to be related to dynamic criticism, for not any answer will suffice just because it is the best available, some minimum quality is required. Very informally, a reasonable answer could be described as a ‘good enough’ answer.

I propose a concept of reasonable answer that fits into our intuitive use and might be useful to describe models of argumentation: *a reasonable answer is the best answer available, obtained after a procedure designed to ensure an adequate level of dynamic criticism*. With this concept, the outcome of a dispute, obtained by following rules of argumentation in a dialogue protocol, becomes an accepted legal proposition³⁶³. Of course, there is much to debate about how to decide which is the best answer available, and what

³⁶³ The concept may be connected to Juliano Maranhão’s discussion of *underdetermined* cases. As a possible definition of what is undisputable, it may distinguish *determined* from *underdetermined* cases. MARANHÃO, 2012, p. 100-113.

would be a proper procedure that reaches an adequate level of dynamic criticism. But, with the appropriate conceptual framework, one can make these discussions precise. Furthermore, the concept embodies the notion of dialectical cogency, that is the most we can strive for. The concept redefines our search. In the quest for the right answer, the ultimate answer may be beyond our reach, but the reasonable answer is already good enough.

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